Telephony

THE AMERICAN TELEPHONE JOURNAL

PUBLISHED EVERY SATURDAY.
TELEPHONY PUBLISHING COMPANY
VOL. 72 NO. 13.

CHICAGO, MARCH 31, 1917.

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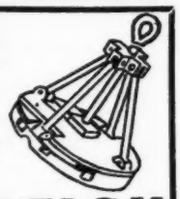

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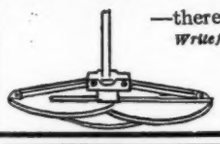

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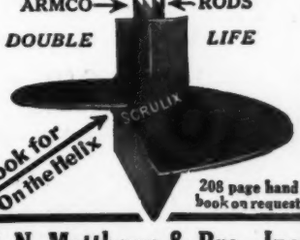

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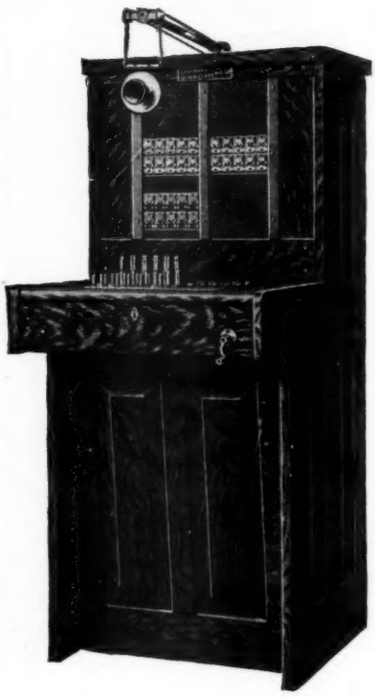

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Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves

PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY

MONADNOCK BLOCK, CHICAGO

EASTERN OFFICE: 52 VANDERBILT AVE., NEW YORK CITY

H. B. McMEAL, PRESIDENT AND EDITOR. H. D. FARGO, SECRETARY AND TREASURER. J. C. KELSEY, VICE-PRESIDENT AND FINANCIAL EDITOR.
S. R. EDWARDS, MANAGING EDITOR. J. R. HASTIE, VICE-PRESIDENT AND ADVERTISING MANAGER

Entered as second-class matter Septemper 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1897

Volume 72
Number 13

CHICAGO, SATURDAY, MARCH 31, 1917

Subscription—10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries

Playing with Words.

In its last annual report, dated March 12, 1917, referring to the Kingsbury commitment, the American Telephone & Telegraph Co., said:

"The arrangement with the Attorney General of the United States, which is set out in detail in the correspondence printed in the report for the year ending December 31, 1913, is still in effect. A careful adherence to it, coupled with entire frankness as to all matters in which the company has been concerned, has resulted in a continued avoidance of misunderstandings and disagreements with the federal authorities."

Word for word, the identical same paragraph is found in the 1915 report. In the 1914 report is found: "The arrangement with the Attorney General of the United States, evidenced by the correspondence between him and this company set out in the last report, has been consistently adhered to, and has resulted in an entire avoidance of misunderstandings or disagreements with the federal authorities."

Whadda ya mean "frankness"? Likewise "careful adherence"? According to Independent telephone men, they are kept busy and on the alert to prevent the Bell from buying exchanges nearly all the time.

How about the Decatur case? Certainly since the 1914 report, the Bell organization has smashed the Kingsbury commitment in more than a few instances. If the federal authorities had not said "No," probably many more deals would have gone through.

Concerning the Western Electric situation, the 1917 report says: "The relations with the Western Electric Co. have been attacked from various quarters, *and always from the questionable standpoint of self-interest.*"

Why "questionable"? The citizen who resists the hold-up man also acts from self-interest, and the same motive actuates everyone who fights injury or imposition. Of course, the citizen could knock the robber down and hand him over to the jailer, claiming he was really striving for the common good of humanity, but the main thing was to stop the infringement of his own rights, instanter.

If the world could put an end to poverty, injustice, intemperance and all other evils by acting from the "questionable standpoint of self-interest," the net result would be the same.

The way to resume is to resume.

Standing for a Principle.

A peculiar incident came to TELEPHONY's attention recently that proves all business men do not elevate the dollar above principle.

It seems that an Independent telephone manufacturing concern had sold a good-sized bill of equipment to an exchange company that proved to be slow pay. Time passed and the manufacturer still waited for a settlement while the operating company, running against a streak of tough luck, was unable to satisfy the claim.

Then a Bell subsidiary cast its eyes on the competing point and saw a chance to pick it up—if arrangements were made so there would be no protest to Washington. The next development was that the delinquent exchange man called the Independent manufacturer on long distance and in substance said:

"I owe you blank dollars, but can't pay up. I have a chance to sell out. If you will agree to permit the sale, I'll send you a check in full within ten days. If you don't, you are likely to lose the whole account, for I am up against it hard. How about it?"

This Independent manufacturer didn't lose any time in turning down the proposition flat.

"Whether this company loses the money involved in this account or not is not the question," said he. "We are not going to sacrifice a principle for a few thousand dollars. The government is opposed to telephone mergers and so naturally are we. Nobody has any right to suspend the operation of that policy to collect a debt or anything else. Meanwhile, we are going to try hard to collect that money."

And we hope he succeeds.

Preservation of Poles from Decay

Necessity for Telephone Companies to Increase Life of Poles—Data Which Shows Preservative Treatment Is Economy—Various Processes for Application of Preservative—Refined Coal-Tar Creosote an Accomplished Fact

By Kurt C. Barth

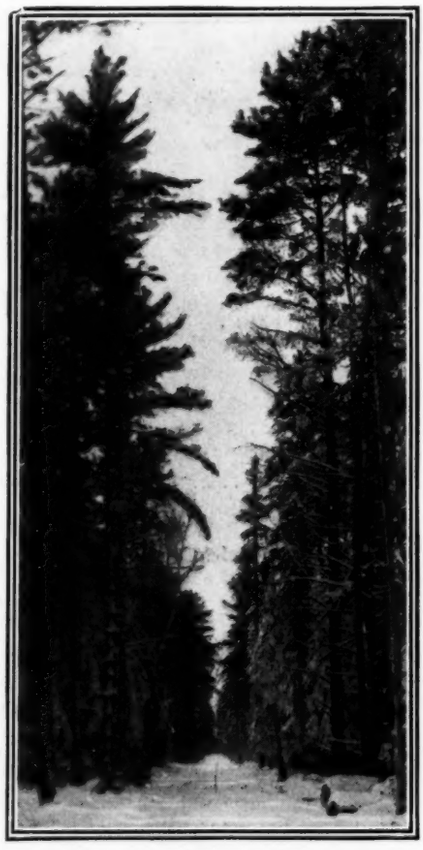
The necessity of economy in the utilization of forest products has recently been brought to our attention very emphatically by the estimates of experts that the standing pole timber of this country will supply our wants, including ordinary expansion, for but 60 years. Reforestration being carried on by the government will relieve this situation to a large degree, but it is not the entire cure. By carefully protecting the poles consumed, and lengthening their life of service, conservation is given the most practical impetus.

As the law of supply and demand quite generally regulates the cost of products, it is evident that a gradually-diminishing visible supply of suitable timber for poles must be followed by repeated increase in prices, which on a progressive ratio will soon incline favorably to poles constructed of other materials than wood. Substitutes may answer the purpose under certain conditions, but they seldom, if ever, render equal service. In the case of poles, no structure has been perfected, economically, which can satisfactorily replace the cedar poles.

It will not be necessary to resort to other materials for carrying the telephone and telegraph wires across the continent, for the distribution of electricity to our industrial centers; or to the rural communities for the irrigation of the land, or for the operation of the railroads, etc., if we promote a rational policy of conservation and protect what we have, by eliminating that most destructive agent of poles — decay.

Ten and 15 years ago great activity was manifested in the erection of telephone and electric lines throughout the central states. Many of the telephone systems were of a rural character, and at the time of their building both crude methods and cheap materials were employed. Preservative treatment of poles was then rarely given consideration. The result is that at present hundreds of thousands of poles must be replaced annually, due to decay, representing in general, an expense in labor and materials nearly double that of the original installation. In the electric light and power field, one may find large consolidations of numerous properties, originally independent, which were built with equal shortsightedness. Here, too, replacements run yearly into the thousands of pieces and dollars.

Such experiences should teach us the value of economy properly applied and, in the case of poles, the necessity of preservative treatment. It is gratifying to note that the number of poles creosoted annually is gradually increasing. Nevertheless, there is still an enormous waste which must be eliminated if we are to truly advance the conservation of our timber resources. According to available data, approximately 75 per cent. of all



The Logging Road in the Cedar Woods.

poles consumed are used without having been given preservative treatment. If the reverse were the case, there would still be too many poles set untreated.

There are certain conditions under which the expense of creosoting would not be warranted. These are recognized but only as exceptions which merely prove the rule; i. e., that no pole should be set unless it has been treated in accordance with one of the three standard methods. The choice of methods depends upon the circumstances applying in the particular case in question.

In 1915 4,077,964 poles were purchased in the United States, an increase over 1911 of 16 per cent. It should be instructive to consider the annual consumption of poles and the causes for their replacement as indicated by the following data, which is quoted jointly from Forest Service Circular No. 78, and the 1910 proceedings of the National Electric Light Association, pages 235-236:

95 per cent. of all poles are destroyed by decay.

4 per cent. of all poles are destroyed by insects.

1 per cent. of all poles are destroyed by mechanical abrasion.

It is of interest to compare the following tables, the first being the number of poles purchased in 1915 of five species (Bulletin No. 519, U. S. F. S.), and the second, their estimated life untreated, and creosoted (N. E. L. A. 1910-11).

The poles purchased in 1915 were divided:

Northern white cedar and western red cedar	2,314,980
Chestnut	651,643
Cypress	67,644
Pine	546,233
Southern white cedar (juniper)	89,244

Estimated average life of poles is as follows:

	Untreated years.	Treated years.
Northern white and western red cedar—average	13½	22*
Chestnut	12	16*
Cypress	9	25†
Pine	6½	20†
Southern white cedar (juniper)	8½	18*

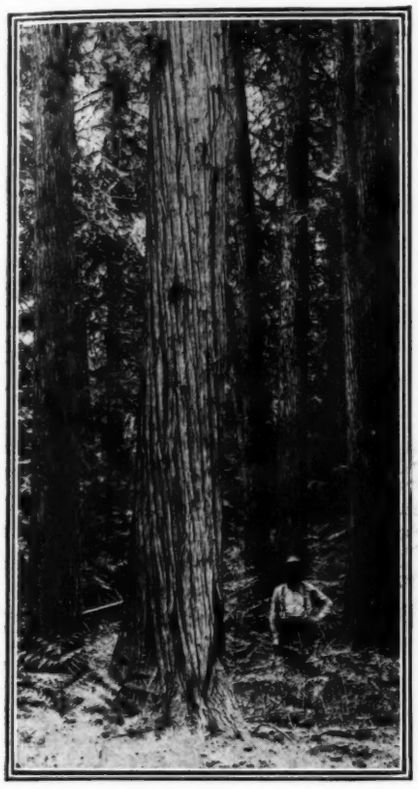
*Open tank process—butts of poles only.
†Pressure process—entire pole.

The figures presented are conservative. It has been claimed that the average life of northern white cedar, and also of western red cedar, is much greater than the years stated. In some cases it is known that this species has given service in excess of 20 years, but such instances cannot be regarded as representing an average condition of the country as a whole.

Each engineer should be familiar with the soil in the districts through which a pole line is to be constructed, and it is obvious that the average life of the respective species in that locality must constitute the basis for further determinations.

Proper application of coal-tar creosote oil is universally recognized as the most efficient manner by which poles may be preserved from decay. Tests of a most

interesting character, very exhaustive as to detail, and covering a period of 50 years were instituted by government authorities of continental Europe, for the purpose of obtaining some definite data



Among Western Red Cedar Trees.

as to the actual results to be obtained from creosoting. The official bulletin, as published in the 1910 proceedings of the N. E. L. A. shows Baltic fir to have an average life, untreated, of 7.7 years, and an average life, creosoted, of 20.6 years. It was impregnated by the pressure process with dead oil of coal-tar (creosote oil).

Numerous examples are in evidence in this country of creosoted poles which have been in service more than 18 years without showing signs of appreciable deterioration, due to decay. Of greater bearing on this matter are the multitudinous records of successful prolongation of the life of structural timbers by treatment with coal-tar creosote.

The wood-preserving industry in the United States is nearly 80 years old and has gradually grown until today it is a recognized force in our economic life. Over 100,000,000 gallons of creosote oil are required annually by the industry, and it is still in its infancy.

It is to be noted that the older records speak principally of the pressure process, but that should not be permitted to influence the reader to assume that only this method is efficient. There are many reasons why that is not so, but it may suffice to say that the effectiveness of any method of preservative treatment is controlled solely by the actual saving obtained from its use. Unless such a saving in the annual cost is a practical fact, no treatment is of any avail.

The three standard methods of preservative treatment for poles are: Pressure process, the open tank system, the brush method. All three are definitely limited within the range of their practical usefulness. Their application is, therefore, dependent upon the field and operating conditions surrounding the work under consideration.

In general, the pressure process is confined to treatment of pine and similar woods, which require that the entire pole shall be treated. The open tank system is most generally used for the butt treatment of cedar and chestnut poles where maximum permanency is desired. The brush method is popular, as it is both economical and convenient and of sufficient value to warrant its wide application.

As this article deals chiefly with cedar and chestnut poles, no further reference will be made to the pressure process of creosoting, as that is not practical for partial treatments.

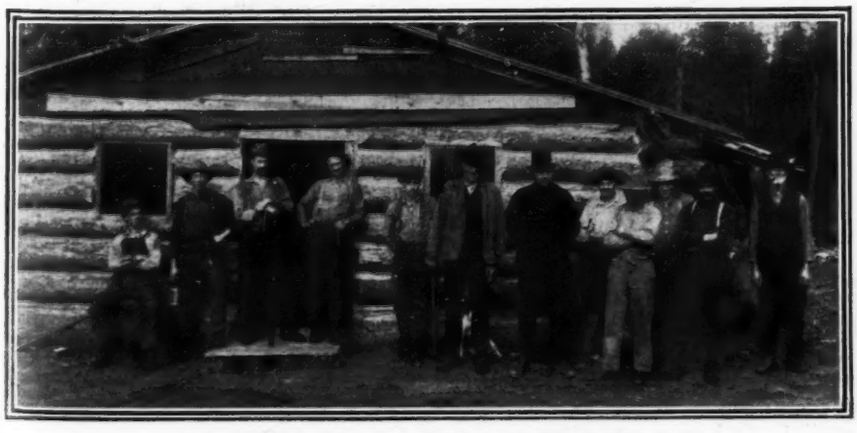
The open tank system, as its name implies, involves the use of open tanks. These contain refined creosote oil, into which the ends or butts of poles are immersed. The procedure consists of first heating the creosote to from 200-220 degs. Fahr. for from 6 to 12 hours, and then permitting the temperature of oil to cool to about 100 degs. Fahr., which constitutes the "cooling" or "cold" treatment. The latter is also continued for from 6 to 12 hours.

The entire period of treatment will vary, depending upon the weather conditions and the moisture content of poles. The object of this process is to obtain a thorough impregnation of the sap ring, thus effectively protecting the heartwood and increasing the life of the pole by 15 to 20 years.

Champion Pole Peelers in Washington.

Unless the proper precautions are taken and the poles are carefully prepared for treatment, satisfactory results will not be attained. Poles must be air-seasoned, and that portion of the pole extending from at least one foot above to two or three feet below, the future ground line, should be carefully cleaned of all adhering inner bark, and soft or brashy spots shaved away until sound wood is exposed. In order to act as an effective barrier to fungi, the creosote oil must penetrate into sound wood.

To determine the stage of seasoning reached by poles, it is best to compute the moisture content by subtracting the theoretical dry weight per cubic foot from the actual weight. If the difference exceeds 15 per cent. by weight, then the pole is not fully air dry. If the moisture is greater than 30 per cent., it is generally not advisable to treat such poles. As a general rule, it is suggested that for each 5 per cent. increase in moisture content (over 15 per cent.), poles shall remain in the "hot treatment" for one additional hour. This will largely eliminate the trouble of uneven penetration often resulting from treatment of sea-



A Logging Crew at a Camp in the Minnesota Woods.

soned poles, which, probably exposed to rain, etc., just previous to treatment, were well soaked on one side.

By increasing the period of "hot treatment," this surface moisture is given additional opportunity to evaporate and therefore does not retard penetration of the oil. If that is not done, we find the uneven impregnation referred to, due to the fact that certain surface cells have become saturated with water, which presents an impassable barrier to the oil. To follow this suggestion would mean a little extra work, but that could be minimized, as a fairly-intelligent operator can readily

Decay at Base of Telephone Pole.

determine, after having handled a few cases, the least costly manner in which to check the weight and moisture content of one pole in each 25 or 50.

The open tank system is somewhat costly, but is well worth the cost when properly executed. Briefly, it may be said that the open tank system of treatment is to be advised:

1. When the period of service the pole line should render exceeds 18 years.
2. When permanent construction is required.
3. When yearly requirements exceed 2,000 poles, 35 feet long or equivalent, and operating conditions warrant installation of simple and efficient equipment.
4. When poles, properly treated by this system and with refined coal-tar creosoted oil, are obtainable from commercial pole-treating plants.

The brush method of treatment is in wide use, as it is both economical and convenient. Extensive experiments have been conducted by the United States Forest Service in co-operation with large pole consumers. The results, some of which cover a period of 15 years and over, overwhelmingly corroborate its value in extending the life of poles so treated. In the words of the government, it "gives an increased life of poles sufficient to pay well for the cost of treatment." As a rule, one year added to the life of a pole will pay for the cost of treatment. An increase in life of about five years may be safely expected from the brush treatment.

Proper application of the brush treatment is naturally absolutely necessary. It consists of applying two coats of refined creosote oil to that portion of the pole extending from one foot above to two or three feet below the future ground line. In lieu of a brush, an ordinary mop may be used, or pole butts can be held over a small trough and the oil flooded over that portion to be treated from dippers or ladles. The creosote oil should be heated to about 150 degs. Fahr.

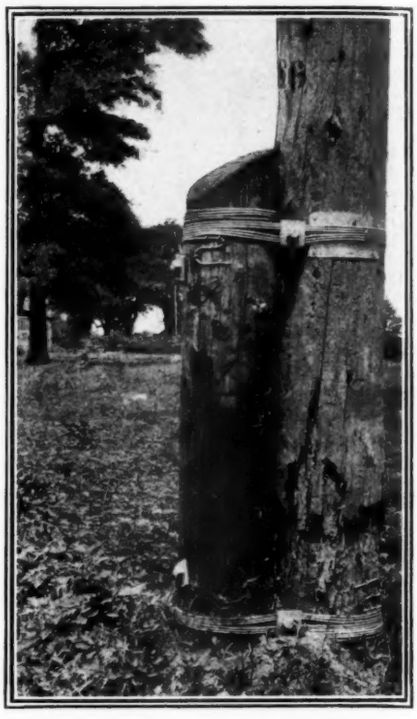
The chief advantage of this method of preservative treatment lies in its ready adaptability to all circumstances, as one pole or hundreds may be treated at an equal pro-rata cost. For field use, it is the only process available.

The actual saving in the annual cost of poles so treated has been figured at about 25 per cent. in the case of 5 in. 25 ft. cedar poles, and approximately 19 per cent. on 7 in. 35-ft. cedar poles, which certainly is worth while.

Small operators, who purchase a shipment of poles each year, and then stock them until required, should apply at least one coat of creosote oil to the entire butts of poles immediately upon receipt. Poles should be framed complete and creosote also applied to the tops and gains. Just previous to setting, the second coat of heated creosote oil may be applied, thus completing the full treatment.

It is quite often observed that poles which have been creosoted are handled so roughly as to damage the coating of preservative applied. Such carelessness destroys the value of the treatment as the effectiveness of the creosote film is dependent upon its remaining intact. Therefore, reasonable care should be taken in transporting treated poles.

The actual cost, including material and labor only, of applying the brush method, employing a standard grade of refined

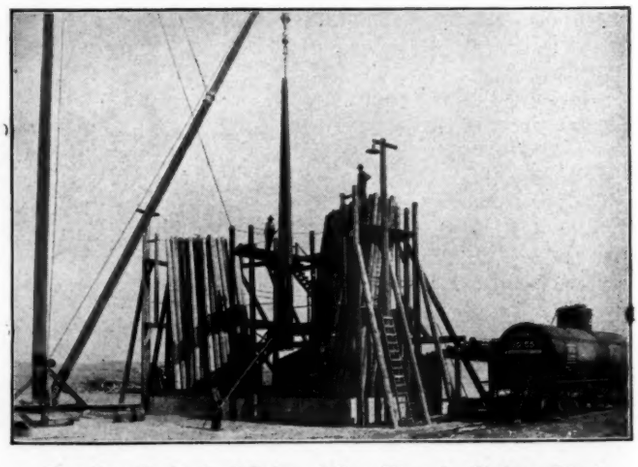


Reinforcement With Creosoted Stub.

creosote oil, will run from 25 cents to 40 cents per pole in proportion to size. The cost is so low as to nearly make it criminal waste for any one to set poles untreated.

The brush method of treatment is advisable and recommended for use under these circumstances:

1. When treatment must be given poles in the field.
2. When annual consumption is less than 2,000 poles, 35 feet long or equivalent. A greater number will warrant a central treating plant.
3. When the period of service the pole line should render is greater than the

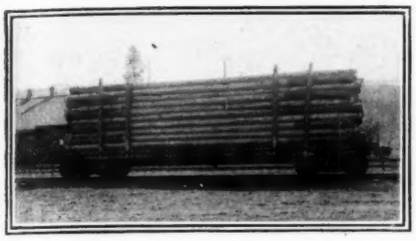


Treating Carload of Poles at One Time in Modern Plant.

natural life of the pole and does not exceed about 18 years.

Selection of the proper preservative is the most important phase of the entire subject. The question presents itself — which is the proper preservative?

This should be readily answered, as



Carload of Creosoted Poles.

coal-tar creosote oil is universally recognized as the standard. It is specified to the exclusion of all other products — non-secret or proprietary — in all specifications sponsored by reputable technical and commercial organizations, as well as by the largest consumers. "There is a reason," quite naturally, and in this case it is based on a record of satisfactory service for nearly four-score years.

Coal-tar creosote oil, for our purpose may be divided into two classes:

First, oils used in the pressure processes, conforming to standard specifications adopted by the industry, and often graded as commercial creosote.

Second, refined coal-tar creosote oil which has been especially developed for use in the open tank system and brush method, or non-pressure processes.

The first class, due to certain objectionable physical properties, is not suited for employment in the non-pressure processes. The oils contain varying and often large percentages of low-boiling fractions, which are subject to evaporation during the heating of the oil, and to solidification in storage and transit. The commercial creosotes vary in quality to such an extent that the average consumer, who has not the laboratory control and technical experience at his command, which is required to distinguish between the products offered him, cannot rely on them, although there may be oils of this class at times meeting his requirements.

Evaporation — volatilization — of creosote oil during treatment represents not only a loss in money equal to the cost per gallon of the oil so lost, but also the amount expended for freight and the interest on the investment represented by the total quantity of creosote thus wasted.

Of great importance are the physical characteristics which, because of the objectionable nature, render an unrefined creosote oil often unsuitable. Among these is solidifying at temperatures higher than 50 degs. Fahr., and lower than 100 degs. Fahr., causing the oil to congeal on the surface of the stick, and creating numerous difficulties in removing the oil from the shipping package, etc., which becomes nearly impossible during inclement weather.

Refined creosote oils have these features removed. The evaporation is eliminated by distilling out low-boiling fractions, thus making the oil permanent. Solidification is avoided by a special treatment which removes the naphthalene crystals, thus producing a liquid oil, which has increased penetrating powers. Chemically, there is practically no difference between the two classes of oils referred to — the toxic value of both grades is nearly equal — but it is self-evident that, for the purposes intended, the changes in the physical character of the creosote are absolutely necessary to permit its employment in the non-pressure processes. As availability and convenience are probably the most important factors which enter into consideration in the practice of any economy, these features bear exceptional weight.

These facts developed a situation, which required a refined coal-tar creosote oil that would meet the practical conditions and chemical qualifications of all consumers using non-pressure processes for the treatment of wood — including the large commercial pole-treating plant and the small operator who has a dozen poles to treat by the brush method.

A specification was then drawn upon which all could unite and this the majority interested has done. Supplying such a refined creosote oil, always uniform, and at reasonable cost, is an accomplished fact. The consumer can be assured of these features by insisting on a refined creosote oil of reliable origin,

A Permanent Line of Treated Poles.

and he can not serve his own interests better than by specifying a trade-marked product — that he knows to represent not only a name, but probably the reputation of a manufacturer of international importance.

In order that the points discussed may be brought to the reader's attention with proper emphasis, a standard specification for a refined coal-tar creosote oil, especially developed for the brush method and the open tank system, is here given, and its careful study recommended:

1. The oil must be a pure distillate from coal-tar.
2. The specific gravity at 5 degs. Centigrade shall be at least 1.08.
3. Water must not exceed 1 per cent.
4. The flash-point shall not be lower than 100 degs. Centigrade.
5. The matter insoluble in hot benzol shall not exceed ½ per cent.
6. Upon distilling by the standard American Railway Engineering Association method, the oil on a dry basis must give:

A. Not more than 1 per cent. up to 210 degs. Centigrade.

B. Not more than 10 per cent. up to 235 degs. Centigrade.

C. Not less than 25, nor more than 60 per cent. up to 300 degs. Centigrade.

Must be liquid at 41 degs. Fahr.

Such an oil embodies the following features to a maximum degree, each of which is indispensable:

1. Toxicity — poisonous to wood-destroying agencies.
2. Liquid — convenient to handle and apply, and easily penetrates the wood.
3. Permanent — insoluble and non-volatile.
4. Uniform.
5. Economical.

In conclusion, the preservative treatment of poles may be divided into four stages, all of equal importance, because the neglect of one will cause the failure of the entire treatment:

A. Preparation of poles for treatment.

B. Selection of proper preservative.

C. Careful treatment in strict accordance with standard specifications.

D. Exercise of reasonable care in the handling of creosote poles.

It is to be hoped that Independent telephony will give the matter of pole preservation more active consideration, so that instead of 25 per cent. at least 75 per cent. of all poles consumed may be made more serviceable by increasing their lives. Those who practice this economy reap the greatest benefit.

Acknowledgment is made for the photographs which illustrate this article to the United States Forest Products Laboratory, the Lindsley Bros. Co., and Larson Bros. Lumber Co.

Calcutta to Have Pay Stations.

The director-general of posts and telegraphs in India has decided to open public telephone call offices at local post and telegraph offices in Calcutta. Should the system be found to pay its way, it will be extended to other places in the city. The charge will be two annas (four cents) per connection of three minutes' duration.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—This Section, "Part VI, The Valuation of Telephone Properties," Written by Chas. W. McKay

Quiz Questions on the Preceding Installment.

105. Discuss working capital. How may it be determined?

106. In the illustration given of working capital in Table VII, what is it understood to cover? Upon what is the working capital based and calculated?

107. What may be said of the component items of the collateral construction costs? What erroneous impression of collateral costs is sometimes obtained?

108. What is the usual range of values assigned to the various elements of collateral costs on a percentage basis of the direct construction costs? How is it customary to determine the present value of the collateral construction costs?

109. What is the best that can be said relative to the values of non-physical assets? What are the non-physical assets? Discuss the difficulty in the past of obtaining favorable rulings on the non-physical assets?

110. State Lord Elden's definition of good will. Is good will considered a factor in public utility appraisal work? Discuss.

111. What is the general attitude relative to the assigning of a value to contracts and agreements in rate-base appraisals?

CHAPTER VI. The Non-Physical Assets (Continued).

112. *Relation of Franchise to Value of Utility Property.*—The valuation of franchises has long been a bone of contention between utilities and regulatory bodies. Looking at the matter solely from the standpoint of the utility, there would seem ample justification for contending that franchises have an appreciable monetary value.

The franchise is the foundation upon which the whole utility structure is built. Take away the franchise and the most prosperous of properties becomes a mere mass of second-hand material worth only what the junk dealer can be induced to pay for it. Indeed many items of plant, such as underground conduit, involving large initial expenditures and of great value to the company throughout its life as an operating utility, become absolutely worthless the moment the franchise is revoked.

It would seem, then, that the franchise must be one of the most valuable assets of a utility corporation, inasmuch as the very life of the company is dependent upon its preservations. On the other hand, from the standpoint of the commissions, and from that of the public they represent, there is an equally good argument for debarring from a rate-base appraisal franchise values except those representing actual costs incurred in securing the franchises.

113. *Valuation of Franchise in Rate-Base Appraisal.*—Franchises are in the nature of a gift from the people. It is obviously most unfair, therefore, to ask the people, or those of them who are utility patrons, to pay rates based upon a capitalization of their own gift.

This represents the general attitude of courts and commissions on the subject of franchise valuation, i. e., the value assigned to franchises in a rate-base appraisal shall be limited to the actual expenditures incurred in securing such franchises.

The question of franchise value affords an excellent illustration of the difference which may exist between value, or fair value, and value for rate-making purposes. In acquiescing to a commission's ruling that only actual costs shall be included in a rate-base appraisal as the value of its franchise, the company may contend—and very properly so—that the actual fair value of the franchise is far greater than any possible cost incurred in securing it, and the value thus assigned is a rate-base, rather than a fair, value.

The equity of this method of evaluating franchises cannot be questioned. It would seem, however, that in return for waiving any claim for greater values, utility corporations should receive the maximum of protection at the hands of municipal and state regulatory bodies in the matter of franchise renewals, so long as the companies conduct themselves in such a manner as to warrant public confidence.

The legal cost involved in securing franchises has already been discussed (sections 86 and 87, TELEPHONY of March 3). There remains, therefore, only the consideration of such other expenses as may legitimately be involved in securing the franchise. These are usually of a minor nature, excepting in the municipalities where it is customary to require prospective utility corporations to bid for their franchise privileges.

114. *Cost of Establishing Business or Going Value.*—Going value has been variously defined as "the cost of establishing the business," "the cost of acquiring an income," and "the capitalization of early losses incurred in connection with the development of the business to where it is capable of producing a fair return on the investment."

This phase of the subject of public utility appraisals is one that has always proven a thorn in the side of the appraisal engineer and one that is usually rather difficult for the beginner in appraisal work to grasp.

There are several prevalent methods of deriving going value and many explanations of the underlying theories have been advanced by eminent authorities. The following extract from the testimony of Kempster B. Miller, in a recent rate case, presents the clearest explanation of going value which, in the writer's opinion, has yet been advanced:

"It is self-evident that a physical plant with a well-established business is worth more than the same physical plant without any business. This element of value, over and above the bare value of the physical plant, I have included under the heading of cost of establishing business. It is sometimes called going value. That such a value exists is indisputable and, besides being a self-evident fact, has been upheld by courts of highest resort.

115. *Analogy to Illustrate Theory of Cost to Reproduce Physical Property.*—"In appraising the physical property, we proceeded upon the basis that the best measure of its value was what it would cost to reproduce it. I have followed this same procedure in appraising the value of the business attached to the physical plant by calculating as closely as possible what it would cost to reproduce the business that existed on the date of appraisal.

I may, perhaps, make the theory upon which I proceeded clearer by a simple analogy. A man who desired to invest his money in a large office building might enter into an agreement with a contractor to construct the building and turn it over to him at a given date for a fixed sum.

In this case, the amount so paid would

constitute the cost of the physical property. This amount, however, would be only a part of what the owner would have to pay in order to produce a building filled with tenants and established on a going basis. In order to fill his building with tenants and place it on an income-producing basis, it will be necessary for him to organize his operating force and sell his space, meanwhile operating the building, keeping it warm, running the elevators, and supplying the attendant janitor and other operating services.

Instead of contracting for the bare building, the owner might include as a part of his agreement with the contractor, the turning over of the building full of tenants and completely organized as a going concern. In this case, it is perfectly obvious that the contractor could not deliver the building at as early a date nor for the same amount of money as when his task was confined to the production of the bare building alone.

As the building approached completion, he would be required to have agents at work securing leases from prospective tenants. He would be required to secure an adequate operating force for the building, consisting of a competent building superintendent and his office force, a building engineer and his subordinates, including elevator men, a suitable janitors' force, and, in fact, a complete organization necessary to keep the building warm, clean, and to carry out all of the other functions required. All this would have to be done before the tenants actually began to occupy the building.

After the actual opening of the building and until such time as the number of tenants required by the contract were secured, the contractor would be forced to pay all operating expenses, which at the beginning would be largely in excess of the rents received. As tenants were secured, the revenue would begin to grow, but it is probable that the contractor would be forced to give a certain amount of rent free during the early stages of the occupancy of the building. Such revenues as were received would, of course, flow to the contractor as an offset against the expenses. It is inevitable, however, that the sum total of the financial results during the business development period would be a loss and, together with the interest thereon, would become a part of the cost to the contractor.

This total cost to the contractor, plus the contractor's profit, would be added to the investment of the owner at the time he took over the building. In this case, the difference between this larger cost of the building full of tenants and of the cost of the physical property alone, would constitute the cost of establishing business and would, in my judgment, be a good measure of the going value.

116. *Division of Cost of Establishing Business.*—"In my appraisal of the telephone property under consideration, I have endeavored to estimate as accurately as possible what it would cost the company to reproduce the business and organization that were attached to the plant on the appraisal date in much the same way as in the case of the contractor just outlined, except that the company would act as its own contractor, without profit. It is believed that money would cost the company, under these circumstances, at least 8 per cent. and therefore that rate of interest has been included in the cost of establishing business.

The cost of establishing business, as derived in the present appraisal, has been divided into three items:

(a) Organization and development.
(b) Selling service.
(c) Net interest and operating expenditures during development.

117. *Organization and Development.*—"It is self-evident that an organization, from executives down to operators and laborers, could not be gathered together in the assumed reproduction of the plant and business without an expenditure of money.

The expense incurred in training and schooling operators before they can become proficient enough to do useful work at the switchboards, is one of many examples that might be cited, and no one at all familiar with the telephone business can deny that a skilled force of operators is a valuable asset. Again, at the beginning of service in a new plant it always occurs that until a certain number of subscribers has been secured, no charge can be made, and the money spent during this period is a part of the cost of building up the organization.

We have placed the cost of organization and development at $33,000, this being less than 2.5 per cent. of the reproduction cost of the physical property. There is ample precedent for an allowance of this percentage, or a larger one, in computing this item.

118. *Selling Service.*—"It has been generally recognized by courts and commissions that a certain amount of cost is involved in securing new subscribers. This cost resides in the salaries and expenses of solicitors, in advertising, and in the actual clerical expense of proper enrollment.

This cost per station in the reproduction of a plant has been placed by various authorities in the neighborhood of $4—usually that amount or more. But after a careful study of the present situation, we arrived at the conclusion that under favorable circumstances we might be able to sell service at a cost of $3.50 per station, and have used that figure. This, for the total of 12,786 telephone stations at the date of this appraisal, places the total cost of selling service at $44,751.

119. *Net Interest and Operating Expenditures During Development.*—"It has been assumed that the total time required for reproducing the plant and the business would be 7½ years. I chose this period because it seemed to be the most economical one and would bear the test of reason. It will be noted, however, from the schedule of expenditures, that the bulk of the plant expenditures was incurred during the first four years and that the remaining 3½ years were spent in a gradual rounding out of the property. The bulk of the plant expenditures during this later period was principally in the nature of minor extensions necessary to connect the subscribers as they were secured.

This is the way that a plant would be built. To attempt to force matters by adopting a shorter construction and business-building period would be more likely to result in a greater rather than a smaller total investment.

It was further assumed that the plant actually began to give service and to charge therefor in the fourth quarter of the third year, or two years and nine months after the beginning of construction. By this means it has been possible, by applying common experience in the telephone business, to determine with reasonable accuracy what the investment would be in the plant at any time during the development period; and again, by applying common experience, to compute what the operating and other expenditures would be, what the revenue would be, and, finally, at the end of the period, what the net cost of all these operations would be at the time that the plant was a fully organized and going concern.

In a tabulated statement, we have shown the investment, the operating and other expenditures, and also the revenue, if any, during each quarter. This gives the basis for determining the deficit or profit for each quarter, thus making it possible to compute the net amount of money required for each quarter, the cumulative amount up to each quarter, and the interest thereon throughout the entire period.

This total interest, thus computed, amounts to $586,051, but inasmuch as interest during construction, amounting to $78,018, has already been allocated to the cost of the physical property, this amount is deducted from the amount involved in the cost of establishing business. Again, during the entire period the total revenue of $1,128,743 exceeded the total operating expenditures of $743,694 by $385,049. This operates as a credit against operating expenditures and, therefore, as a second deduction from the total interest account.

These two deductions amount to $463,057, which, deducted from the total inter-

est of $586,051, leaves a balance of $122,984 as amount of net interest and operating expenditures during development.

120. *Summary of Theory of Cost of Establishing Business.*—"To summarize, the theory upon which I have proceeded in estimating the cost of establishing business was to assume, as is the case, that the town presented an average opportunity for a telephone enterprise; that the development of the property there in its hypothetical reproduction was carried out with ordinary care; and that a period of three years would be required to reproduce the bulk of the property and a total of 7½ years would be required to reproduce all of the business and make the gross and net incomes equal to what they were on June 30, 1915.

Under these circumstances, the deficit for the first year would necessarily, with reasonable interest, be required to be carried over to the next year. The deficit at the end of that year would necessarily be added to the previous one, and, with interest thereon, carried to the next year, and so on from year to year, the deficiency decreasing each year until finally the current income would be more than sufficient to balance the current liabilities, and at the end of the period would be as they were at the date of appraisal. In this state of equilibrium, the deficiency account would seem to be a fair measure of the value of the mature going business.

121. *Total Cost of Establishing Business.*—"The three items in the total cost of establishing business—$33,000 for organization and development, $44,751 for selling service, and $122,984 for net interest and operating expenditures during development—amount to $200,735. This is slightly less than 15 per cent. of the total reproduction cost of the physical property which, measured by all standards of comparison that I have been able to secure, is conservative.

Of the many methods that have been proposed for calculating going value, or cost of establishing business, I have applied all that seem in anywise reasonable to the facts in this case and they have almost universally produced a larger value than the one herein presented. For instance, in the recent case before the Board of Public Utilities Commissioners of New Jersey, involving the telephone rates at Camden, the method advanced by the commission, when applied to the present case, results in a figure of $211,342, which is 5 per cent. higher than the figure set up in my appraisal."

(To be continued.)

Annual Reports in Oregon.

The date on which telephone companies are required to make their annual reports to the Oregon Public Service Commission has been changed to December 31.

Independents Represented on Committee for National Defense.

F. B. MacKinnon, of Washington, D. C., has pledged to the government, through Secretary of War Baker, chairman of the Council of National Defense, the active co-operation of every Independent telephone company in the United States, should the time come for the need of such co-operation in case of war or in any other emergency when the telephone lines of the country may be of service to the government.

Should war be declared, every telephone line of the country might at some time be needed in the government service. At all times government business takes precedence over private commercial business but in time of war this precedence is an absolute necessity. In fact, were war to be declared, the government would in a sense take control of all the telegraph and telephone lines of the country. Necessarily uniform rules for handling government business, regulation as to censorship of messages and arrangements for direct connections to all army headquarters would have to be established.

As a member of the committee on communication of the advisory commission to the Council of National Defense and appointed to represent not only the members of the United States Independent Telephone Association, but every Independent telephone company, Mr. MacKinnon has pledged the active support of every Independent manager and employe.

This committee on communication consists of Theodore N. Vail, president, American Telephone & Telegraph Co., chairman; Charles P. Bruch, vice-president, Postal Telegraph-Cable Co.; Newcomb Carlton, president, Western Union Telegraph Co.; F. B. MacKinnon, vice-president, United States Independent Telephone Association, and N. C. Kingsbury, vice-president, American Telephone & Telegraph Co.

At a conference held in Washington, March 19, with the secretary of war, General Kuhn of the general staff and president of the War College; General Squier, chief signal officer of the army, and Commander Todd, director of communication for the navy, each member of the committee on communication pledged the co-operation of the interests represented by him in whatever measures the Council of National Defense might see fit to adopt in utilizing the telephone and telegraph systems of the country in time of war or in preparation therefor.

The committee on communication has been created as a part of the advisory commission to the Council of National Defense for the purpose of bringing into close co-operative touch the various telephone and telegraph interests and to provide a committee of advisors to the war and navy departments for the use of the telephone and telegraph lines in wartime.

The Council of National Defense created by the last Congress consists of Secretary of War Baker, chairman; Secretary of the Navy Daniels; Secretary of the Interior Lane; Secretary of Agriculture Houston; Secretary of Commerce Redfield, and Secretary of Labor Wilson.

By the same act there was created an advisory commission to the Council of National Defense, which is made up as follows: Howard E. Coffin, Detroit; Daniel Willard, Baltimore; Bernard M. Baruch, New York; Julius Rosenwald, Chicago; Samuel Gompers, Washington, D. C.; Dr. F. T. Martin, Chicago, and H. T. Godfrey, Philadelphia. To Mr. Willard was assigned the department of transportation and communication, and Mr. Willard in turn asked Mr. Vail to serve as chairman of the committee on communication.

Active preparations are being made for mobilizing the telephone and telegraph industry in case of war. A signal corps is being so formed that the various employes of the telephone companies will be enlisted and utilized in their present position as a part of the reserve force of the nation. Maps are being prepared, showing the location of all exchanges and the toll connections, ready for instant use should the occasion arise.

To Mr. MacKinnon, the representative of the Independent companies on the committees, falls the task of furnishing maps and data regarding the Independent companies. Doubtless Mr. MacKinnon will get in touch with every Independent company and explain to them what will be expected of the telephone companies should war be declared.

To the minds of many, in time of war only the ones called upon for service are those who enlist in the army and navy and take part in the actual fighting. The war in Europe has demonstrated that many war measures are applied within the country itself and much has depended upon the telephone and telegraph employes for preventing plots and for enabling the government to keep in close touch with all parts of the country and with the supply depots, munitions factories and other necessary resources. Thus the telephone and telegraph systems of England, France, Germany and the other countries at war have become a vital part of the army systems.

It is true that many men experienced in the handling of telephone apparatus will be needed with the army in the field and doubtless a call will be issued for volunteers for such service. But the great majority of telephone employes will be called upon to render their service to their country in the positions in which they now are and will be relied upon to a very great extent by the government for carrying on the war to a successful conclusion in the protection of the rights of the nation.

Association a Formidable Weapon

Business Ability and Personal Effort on Part of Every Independent Company Required to Make United States Independent Telephone Association Formidable Weapon of Strength and Influence—Why Every Company Should Join

By J. B. Edwards

The United States Independent Telephone Association is one of the best things Independent telephone men have if they will use it. With proper use it has unlimited possibilities for the good of the industry. Like any weapon or instrument, it is formidable only in the hands of a strong and skilled operator—and that operator must be a *united* Independent industry.

Are we willing to give the time and attention necessary to make the United States Independent Telephone Association a formidable weapon of strength and influence in our hands? To do this, as in everything worth while, requires business ability and personal effort on the part of every Independent company in the association. It requires that the association's business shall be the most important part of your private business, and shall have the first call upon your time, attention and energies.

With that spirit pervading the membership, nothing could stop the influence and growth of Independent telephony. And it would not require sacrifice to do this. Sacrifice is not the right word. It would require hard enthusiastic work in behalf of the association, but nothing you could do in your private business and upon which you would spend a like amount of energy and time would benefit your private business to the same extent. Money and time spent in helping others to promote the *general* business in which you are engaged is money and time spent to the very best advantage in promoting the *individual objects* of *your own* business.

I believe the foregoing principles to be sound, and that without them and the co-operation and organization which they would promote, the largest possible success in the Independent field cannot be accomplished; in fact, it is doubtful if without them, we can hold our own against the perfect organization with which we have to compete.

The benefits of organization are so numerous that to attempt to list them would be futile. There are none of the problems that enter into your private business, to-wit, apparatus, systems, traffic, help, rates, toll connections, or any other branch of the business that might be named, that is not helped by a close association—a rubbing of elbows—with someone else attempting in his field to solve the same problems. The reasons for organization, and for strong live organizations, are like the sands of the sea, but it would stump me to give one, just one single reason, against it.

First: Referring briefly to some of the most important reasons why every Independent telephone man should seek first and foremost to promote his own business by pulling upon the same rope of organization with every other man similarly situated, the reason I should name first in importance, is the fact that we have a perfect organization and perfect teamwork to compete with. It is a self-evident truth

J. B. Edwards.

of ordinary human experience that you must fight organization with organization. You cannot compete against system with a loosely-joined, half-hearted or partial group of representatives. Therefore, to make the most of our opportunities in the Independent field, the United States Independent Telephone Association needs every Independent man backing it in a harmonious and strong organization.

Second: A more perfect organization would result in better support for our official organs. If every Independent telephone company should join and actively work for the association, I believe it would result in an increased circulation for our telephone papers and a more active interest in the news and articles contained in them. This alone would be of inestimable value in the way of diffusing information and amalgamating the Independents' interests into a unit upon the questions that are vital to them.

Men talk what they read and what they learn from talking with other men. The intelligence department of an organization is of first importance in keeping the membership informed and talking unitedly upon the right side of all questions that arise.

Third: Increased membership. The influence of any organization is mutliplied in proportion to active enthusiastic membership of the organization. No matter how small a company the Independent operator may represent, his influence as a member is of the utmost importance. With how much more weight and authority the organization could speak upon questions of legislations, of rates, of toll connections, etc., if all Independent operators were active members!

Fourth: Organization would enable us to maintain better standards of apparatus and systems which are now worked out in an isolated way by each individual company. With all Independent operating companies in the national organization, we would then have every technical, commercial, and legal advantage that one single owned organization would have.

Fifth: A national Independent organization including all Independent companies could get from our national and state legislatures the things they ought to have. Under this head would be legislation affecting rates, rights of way, physical connections, and legislation putting the industry on a more substantial footing from the standpoint of the investor. The association then, in each instance, would be the controlling factor for guiding such legislation and would also be the controlling factor with which the Bell organization would have to deal on all questions, and not the isolated companies.

Sixth: Efficient organization would enable the Independent operators to better control the questions of government ownership and government supervision of their property. Nothing counts so much in affecting government control of a public utility as the numerical strength, efficiency, and enthusiasm.

I have just briefly mentioned some of the high spots that stand out in my mind as making it imperative for every last one of the Independent telephone companies to join the United States Independent Telephone Association, and after joining to give the affairs of that association the

first call upon their time and attention, and to support it with enthusiasm and with their money.

You can't get something for nothing, but you can come nearer to it by giving a few dollars and some time and real effort to the affairs of the United States Independent Telephone Association than in any other way. A dollar spent for the association is worth more to an Independent telephone company than $5 cut off of its overhead. It will have direct results that are far-reaching and beneficial. We have organization in our individual plants, but it is just as important to have organization and to maintain a fixed policy among a group of such plants similarly situated.

No Independent telephone company should fail to enroll itself as a member of the United States Independent Telephone Association, and co-operate with that organization, thereby strengthening the whole movement and deriving the benefits resulting from a larger and stronger association.

Damage Done by Tornado at New Albany, Ind.

Both the local and long-distance services of the Bell and the Independent companies at New Albany, Ind., suffered heavily as a result of the tornado which skirted the northern rim of the city on the afternoon of March 23.

Minor Corman, superintendent of the Central Home Telephone & Telegraph Co., Louisville, Ky., estimated damage done to the local and long-distance lines of the Independent company at $12,000. A. M. Floyd, manager of the local properties of the Southern Telephone Co. of Indiana, made no estimate of damage.

Two of the Independent long-distance routes were laid low, besides much of the local wire systems, about five miles of pole systems being involved. Temporary long-distance service was restored at the outset, after which the company began repairing the city lines and permanent reconstruction of the toll lines. A crew had just completed repairing the snow damage on the Louisville side of the river and was put at once on the Indiana side.

Telephone Cables, Wires, Lighting and Trolley Wires Were All Brought Down.

Damage to the lines of the Southern Telephone Co. of Indiana included loss of 1,800 feet of 25-pair cable and between 500 and 600 feet of 50-pair cable, over a mile and a half of which had just been reconstructed. About 35 poles were involved. On toll lines there was a 22-pole break west of the city on the Cincinnati-St. Louis line and a 20-pole break east of the city on the Louisville and Indianapolis line. A construction crew, engaged at Jeffersonville, Ind., was immediately put to work on reconstruction.

Long-distance service on both systems was temporarily restored before the day following the storm. A multitude of calls between Louisville and New Albany has taxed the capacities of the systems ever since the storm.

What the Tornado at New Albany, Ind., Last Week Did to Wire Systems.

Decatur Telephone Merger to Be Completed in May.

As stated in TELEPHONY of March 17, the Central Union Telephone Co. has taken possession of the property of the Decatur Home Telephone Co., at Decatur, Ill., and is shifting telephones to the Central Union exchange. It is expected that the complete transfer of the Home telephones will be made to the Central Union switchboard by the early part of May.

There can be no increase of telephone rates by the consolidated company under the terms of the existing franchise, except the increase makes the rates on a par with the cities of like size for like service. The company must also satisfy the public utilities commission that the increase is justified.

Nominations of American Institute of Electrical Engineers.

At the meeting of the board of directors of the American Institute of Electrical Engineers, held in Chicago on March 9, the report of the committee of tellers of its canvass of the nomination ballots cast for candidates for the institute offices falling vacant July 31, 1917, was presented.

As required by the constitution of the institute, the board then selected by ballot its list of "directors' nominees," with the following result:

For president, E. W. Rice, Jr., Schenectady, N. Y.

For vice-presidents: Frederick Bedell, Ithaca, N. Y.; John H. Finney, Washington, D. C.; A. S. McAllister, New York.

For managers: Walter A. Hall, West Lynn, Mass.; E. H. Martindale, Cleveland, Ohio; Wm. A. Del Mar, New York; Wilfred Sykes, Pittsburgh, Pa.

For treasurer, George A. Hamilton, Elizabeth, N. J.

Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies—Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Colorado Commission Asks for Wider Authority.

In its second and third annual reports recently issued by the Colorado Public Utilities Commission, the idea is expressed that during the past two years the work of the commission has been largely that of laying a foundation for future development. While great strides have been made in establishing cordial relations between the utility corporation and the public, and the commission has had the supervision of all matters pertaining to service, ample power is not provided for protecting the corporation. The commission therefore asks for wider authority.

It recommends to the governor "that the present public utilities act be amended so as to give the commission full power and authority to issue certificates of public convenience and necessity, or to deny such certificates, to any and all corporations, firms or individuals doing business or seeking to do business as public utilities. Should such authority be given to the commission it would guarantee the public utility corporation immunity from local and state politics and would guarantee the public utility corporation the right to do business for so long as it complies with the requirements of the public utilities commission in regard to reasonable rates and adequate and efficient service or product.

"Thus the people would receive the greatest possible benefit from efficient management of the corporation, and the corporation in turn would be safeguarded against the possibility of unfair competition, for which, in the end, the public must pay, even though it benefits temporarily by reduced rates. Under such a provision a sufficient showing would have to be made to the commission to satisfy the commission that there was actual necessity or that it would serve public convenience for a competing company to enter a field or district already served by a public utility corporation.

Should such an amendment be passed it should include a provision whereby any municipality would be entitled to purchase a property already constructed at a valuation to be fixed by the commission, and it should also contain a provision whereby a municipality might, upon vote of the people, erect or construct a competing plant, upon securing therefor a certificate of necessity and convenience from the public utilities commission.

The commission wishes to suggest another amendment which would place under this commission full control of stock and bond issues of the several public utility corporations already existing within the state of Colorado, and all public utility corporations which hereafter may be organized for the purpose of serving the public. Such a provision exists in the laws of many of the states and has been found beneficial, both to the public and to the corporations, inasmuch as it tends to keep the capitalization of the corporation and the bond issues of the corporation within bounds, and prevents watering of stock to such an extent that a fair return upon the investment is not sufficient to pay interest upon bonds and dividends upon stock.

Such an amendment also should contain a provision whereby no company could merge with another company or could become a holding company for another corporation without permission to do so from the commission. Such a provision would prevent a paying property from taking control of an insolvent property, or one which was not paying expenses, and thus would prevent the patrons of the solvent company bearing the burdens of an insolvent company."

Utah Legislature Enacts Public Utilities Law.

The Utah legislature has enacted a public utilities law and it has been approved by Governor Bamberger. A public utilities commission is created and it has been given jurisdiction over the steam and electric railways, all common carriers, express companies, lighting, power and gas companies, heating companies, telephone and telegraph companies, water corporations (including irrigation companies) and warehousemen. A salary of $4,000 is provided for each of the three commissioners.

A strong attempt was made by some of the members of the legislature to have included within the jurisdiction of the commission coal companies, sugar companies, lumber companies and other lines of trade which may be found by the commission to have a virtual monopoly of the business in the state, but this provision was finally defeated.

All of the utilities affected are required to file with the commission their schedules of charges and no utility is permitted to change its charges without first receiving permission of the commission to do so. The commission may fix schedules of rates for the various utilities and may modify any requirements, orders, rules, or regulations, if such a change is desirable.

Discrimination in rates, service, or facilities, is prohibited as between localities or as between classes of service. Sliding scales of charges, however, are permitted, providing such schedules are not found to be discriminatory. All forms of rebates are prohibited.

The commission may require fixing of through routes and joint rates for railways and the interconnection of telephone and telegraph lines and such other utilities as it may find advantageous to the public welfare.

Common carriers, telephone and telegraph companies are prohibited from making a greater charge for transportation of persons or property or transmission of messages for shorter than for a long distance over the same route. The commission is given authority to relieve the utilities of the requirements of this section, if it believes it is in the interest of good public policy to do so.

The utilities are required to furnish the commission with such information, including maps, contracts, etc., as it may desire. The utilities are required to furnish an annual report in such form as the commission may require, covering their operations during the year.

The commission may make any investigation on its own volition which it may believe in the interest of the public and may institute such hearings upon due notice covering any matters which it wishes to investigate. Whenever the commission shall find after hearing that the rules, regulations, appliances, facilities, or service of any public utility or its method of manufacture or distribution are unjust, unsafe, or inadequate, it may determine what are the proper conditions and require the utility to provide them.

It may order such extensions, repairs, or improvements as it may find are reasonably necessary to the public welfare. It may require the utilities to operate their systems in such a manner as to promote and safeguard the health of their employes and patrons, including the installation and maintenance of proper safety appliances. The commission is required to investigate the cause of all accidents on the property of all public utilities and may require such changes as in its judgment are necessary, after the investigation, to prevent a recurrence. All utilities are required to file a report of all accidents.

The commission is authorized to fix just and reasonable standards for the

service to be furnished and for the measurement of the quantity and quality and other conditions pertaining to the supply of the commodity or service furnished. It is given authority to enter the premises of the public utilities for the purpose of making such tests as are necessary to determine whether or not service is being furnished in accordance with the requirements.

The commission is given authority to ascertain the value of the property of every public utility and to make revaluations from time to time of new construction, extensions, and additions to property. It may also fix a standard system of accounts to be kept by the public utilities subject to its jurisdiction and the utilities are prohibited from keeping any other system of accounts thereafter. The commission may require the establishment of adequate depreciation accounts.

No utility is permitted to begin the construction or operation of any new system or extensions to its present system without having first obtained from the commission a certificate that the present or future public convenience and necessity require such construction and the commission may after hearing issue or refuse to issue such permit. Wherever a franchise is necessary in order to begin new construction work, the commission may issue a preliminary certificate declaring that it will issue the desired certificate for new construction work after the franchise has been secured from the proper public body.

When ordered to do so by the commission, the utility is required, before entering into any contract for construction work or for the purchase of new facilities, to submit such proposed contract to the commission for its approval. If the commission finds that such proposed contract and purchase may directly or indirectly divert the funds of such utility to any of the officers or stockholders of any corporation in which they are interested, or if the contract is not for the economical benefit of the utility, then the commission shall withhold its approval and may order such other contracts or purchases as it may find to be legitimate.

The commission may not be bound by the technical rules of evidence in the conduct of its hearings. It may issue subpoenas, writs of attachment and such other processes as are necessary to accomplish the powers granted it by the act. Provision is made for the appeal from the decision of the commission to the supreme court of the state for the purpose of having the lawfulness of any decision inquired into and determined.

When complaint has been made to the commission concerning a rate or charge for a commodity or service and the commission finds that the public utility has charged an excessive or discriminatory amount or has discriminated against the complainant, the commission may order that the public utility make due reparation to the complainant.

The commission is specifically charged with the duty of seeing that the provisions of the constitution and the statutes of the state affecting public utilities are enforced and obeyed. The attorney-general or the proper district or county attorneys must assist in any investigation, hearing, or trial, under the provisions of the act, when called upon to do so.

Provision is made that, if any portion of the public utilities act is held to be unconstitutional, this decision shall not affect the validity of the remaining portions of the act.

An appropriation of $50,000 is made to provide for the expenses of the commission for the coming bi-ennium.

Physical Connection Sought at Ashland, Wis.

The Ashland Commercial Club of Ashland, Wis., has forwarded to the Wisconsin Railroad Commission a formal petition asking for physical connection between the toll lines of the Home and Bell companies in Ashland. It maintains that public convenience and necessity require physical connection between the toll lines of each company, and that such connection would greatly extend the use of the telephones of both systems and would be of great advantage to the subscribers of both.

Four requests are made: First, physical connections of each of the systems with the toll lines of the other; second, determining and prescribing the conditions and compensation for such joint use; third, providing for the making and maintenance of such connections; fourth, providing for any other relief to which the petitioner may be entitled.

Agreement Reached in Pittsburgh Rate Controversy.

After nearly four years of contention over telephone rates, an argument has been reached by the Central District Telephone Co. and the Pittsburgh Chamber of Commerce that will result in a marked decrease in service cost for all except the flat rate charges in the Pittsburgh, Pa., district.

This agreement was reached at a hearing before Commissioner W. D. Ainey, of the Pennsylvania Public Service Commission on March 15. The reduction will amount to $314,000 a year, of which $279,000 will be on local service and $35,000 on toll calls originating in that district.

The agreement is now before the public service commission and the impression has gained ground that it will act favorably on the proposed settlement. It is stated that the city is disposed to follow the lead of the chamber in the matter and agree to the proposed settlement.

In the settlement just reached, it was agreed that the question as to the continuance or abolishment of the business flat rate service be left to the sound judgment and determination of the commission, the reduction of $314,000 being the minimum amount of the reduction and entirely irrespective of the decision of the commission in regard to business flat rates.

Iowa Public Utilities Bill Passed By House.

H. F. 406, placing all telephone companies, operating in the state of Iowa, under control of the state railroad commission, was passed by the Iowa house last week, by a vote of 59 to 34.

The bill, as passed, does not contain the perpetual franchise clause objected to in the bill as originally presented, a substitute by Representative Shortess being adopted instead of the original bill.

The bill does contain a clause, however, which prohibits the licensing of any new company in any town where a company is now operating, unless need for a new company is proved to the satisfaction of the railroad commission.

Representative Randall, of Linn county, led in the fight against the bill, and a motion to reconsider has been filed, signed by Representatives Rayburn and Baldwin, in an attempt to yet remove the feature which, Mr. Randall claims, grants virtual monopolies to the companies now in the field.

The bill is a modified form of others which have been defeated in previous legislatures, and will go to the senate for action after the house has taken up the question of reconsideration. Until a motion to reconsider is acted upon the bill is tied up in the house.

The act provides that the commission shall establish reasonable, fair and just rates for service, and that no rate increases may be made after the date of the passage of the act without consent of the railroad commission.

The commission is also empowered to force physical connections between any exchanges in the state, and also to exercise any powers necessary to determine just and reasonable rates.

Spokane Franchise Case Again Up Before Court.

That the city of Spokane should present its case to the public service commission instead of asking the superior court to pass on the telephone franchise was the contention of Attorney F. T. Post in the court of Judge Huneke on March 17.

Attorney Post argued in support of his motion to quash the amended petition in behalf of Harvig Ellertsen, who seeks to compel the telephone company to install a telephone for him at the $2 rate.

Assistant Corporation Counsel Alex Winston, who represents Mr. Ellertsen, cited authorities in an attempt to prove the present status of the franchise, gives Mr. Ellertsen authority to seek relief in the courts.

Judge Huneke took the case under advisement.

Judge Kennan threw the case out of court recently, but a second attempt was made to get a court decision by presenting the amended petition.

Ohio State Company Denies City's Contract Is Valid.

Proceedings were arranged for another test of the right of the Ohio State Telephone Co., to increase its rates at Columbus, Ohio, to $54 a year, on March 10, when the Ohio State Telephone Co., through its attorneys, Daugherty, Todd & Rarey and George G. Jones, filed an answer to the city injunction suit, in common pleas court.

The answer raises the question that the telephone company obtained its rights from the state and hence its contract with the city is without consideration; that the telephone company has built sufficient conduits under its franchise to entitle it to raise prices; that the city is without authority to fix rates, and that the company operated last year at a deficit of $60,000.

By filing a demurrer to this answer the city will again question the right of the company to increase its business telephone rates.

Pleads for the Restoration of Telephone Service.

A plea was made recently to the New York Public Service Commission for a modification of its order upholding the suspension of telephone service to the Mediator Publishing Co., at 121 Canal street, New York, because of complaints of the language used by Morse M. Frankel, editor of The Mediator, to exchange girls in the telephone office.

Ellwood M. Rabenold, counsel for the company, told the commission that Mr. Frankel was only an employe, and that it was unfair to men who had invested in the business to deprive them of telephone service. Without a telephone the business could not be carried on, and without Mr. Frankel the publication, that is devoted to the interests of master bakers, could not be issued.

Massachusetts Commissions' Expert on Telephone Courtesy.

In connection with the decision of the New York Public Service Commission in which it upheld the action of the telephone company in discontinuing the service of a subscriber who had used abusive language to operators and agents of the company, William H. O'Brien, chief of the telephone and telegraph department of the Massachusetts Public Service Commission, in answer to the question as to whether any such cases had come before the Massachusetts commission, made the following statement:

"There have been a number of such cases during the more than three years of our existence as a supervising department. Some have been very vexatious and difficult to solve, but it is a pleasure to say that every case has been adjusted without resort to extreme action.

Of course, it is but natural in the hurly-burly of business for some men — and occasionally a woman — to get a little testy, but we have such an abiding faith in the innate courtesy and fairness of the vast majority of our citizens that while some subscribers do get 'het up' occasionally, we have yet to see the first case which could not be straightened out after a 'heart to heart' confab, either at the department or at the subscriber's office or home.

There have been several cases where it has been necessary to compel subscribers to change to another grade of service because of undue use of party line, but since the commission began its campaign more than two years ago, against this form of discrimination, such cases have reached the minimum. But as to abuse by subscribers, I have yet to handle a case where, however great the provocation — and *it is* sometimes great — that the offending party has not come back in man (or woman) fashion, after a sit-down."

Attempt to Throttle Legislation in Nebraska Assembly.

The Nebraska (Bell) Telephone Co. is castigated in a report just filed of the committee of the Nebraska senate to investigate charges that the telephone companies were attempting "to throttle" legislation by giving free service to members. The Lincoln company is given a clear bill of health, but the maintenance of headquarters in a hotel where legislators are permitted to use the telephone, even though they pay for it, is "reprehensible and against public policy."

It is recommended that a law be passed prohibiting any public officer from accepting, directly or indirectly, any free telephone service from any company or for any company to furnish such free service. Lawyers hold that this is unnecessary, however, as the courts have held that giving free service is equivalent to giving a reduced rate, and there is now on the statute books a law making it unlawful for a common carrier to charge a less rate or give any special rebate to any person. The report covering the operations of the Bell company follows:

"We find that the Nebraska Telephone Co. has a room in the Lincoln hotel, in this city used by its legislatives, who are here throughout the session of the legislature, and where any members of the legislature are made welcome whenever they see fit to visit the room; that a telephone is installed in this room which does not pass through the private exchange of the hotel, but is connected direct with the local telephone company's switchboard, under agreement between the Nebraska Telephone Co. and the Lincoln Telephone & Telegraph Co., the telephone number being B-3191.

We further find that it has become a custom for some members of the legislature, including some members of the senate and some members of the house of representatives, to use this telephone for long distance purposes, with the knowledge and assistance of the representatives of the Nebraska Telephone Co. It seems that at the beginning of this session of the legislature the Nebraska Telephone Co. established the system of charging all long distance calls over this telephone to the person making the call and then rendering a statement therefore to such person. Some of these calls have been paid to the Nebraska Telephone Co. by the member using the telephone, and some have not, but it is our understanding that statements have been rendered to all. All of these calls are, in the first instance, charged by the Lincoln company against the telephone B-1391 and paid by the Nebraska company to the Lincoln company.

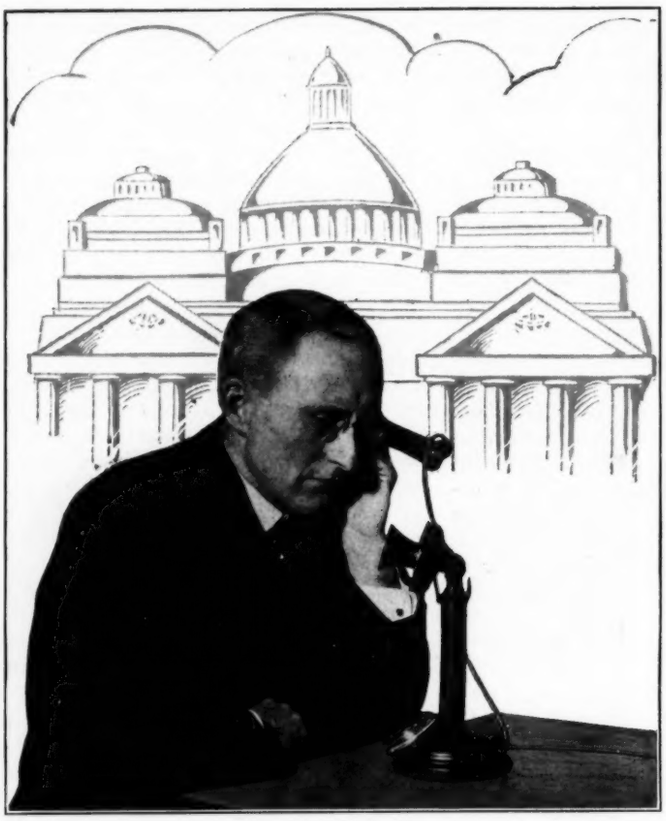
We have been told that some members of the legislature of two years ago used a telephone in the rooms of the Nebraska Telephone Co. much as their telephone has been this year, although, as we believe, this year is the first that calls have been charged to the person talking."

Furnishing Service in Sparsely Settled Section.

A novel application to the Nebraska State Railway Commission was recently made by the Wyoming & Nebraska Telephone Co., which owns a number of exchanges in northwestern Nebraska and eastern Wyoming. It is attempting to develop a territory where the distance between towns averages 15 miles and where large ranches and not farms make rural construction expensive.

The company asked that the commission permit it to extend its rural line from its present terminus to Sparks, under an agreement by which the subscribers to be served on the extension shall haul and set the poles, the subscribers to be without any subsequent interest in the line. The company agreed to furnish the wire and complete the installation of service equipment, and was to collect from the parties installing telephone the regular rates.

The sanction of the commission was asked for the reason that a number of other outlying districts were applicants for service on the same conditions and



Said the Governor of In

"I am glad to have the oppor
Automatic. I hear you very distin

"Yes, and I hear you all
Governor of Ohio.

This conversation passed betw
morning, March 19—only 35 hours
Automatic system had been cut in

To mark this event, Governo
base of his telephone, called Gover
—175 miles away—direct, and
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"I hear you very distinctly."

That is what all Automatic users say after using the Autom Telephone transmission—the standard common battery instrum that is used not only for local and long distance service, but is being adopted on rural lines, putting an end to all the trouble the growing expense of local batteries.

And when to this excellent transmission is added quick con tions, no wrong numbers, no false "busys"—all the advantages feature the Automatic Telephone service—it is not surprising not only the Governor, but every other patron of the Indianap Telephone Company's system is "glad to have the opportunity talking by means of the Automatic Telephone."

Although in service only two weeks, the traffic over the Autom system has increased enormously, complaints have dropped to a ligible quantity, and the number of new subscribers is growing d

As is always the case, the people of Indianapolis — given the chance to choose between the Automatic Dial and the Switchboard Girl—are choosing the Dial, while many of the city's largest business firms are installing Automatic Private Exchanges throughout their establishments.

The Automatic benefits the city by giving superior telephone service, and benefits the operating company by helping it win more and better business.

1904

The Columbus, O., Au 1904—the Indianapolis sy

Many improvements h ing those 13 years, but the best.

And today the two s old, are working togethe

This is one of the ma never becomes obsolete, feature has ever been d Automatic exchanges as

Some Other Capitals Using the Automatic

St. Paul, Minn.
Harrisburg, Pa.
Lincoln, Neb.
Lansing, Mich.
Honolulu, Hawaii
Phoenix, Ariz.
Havana, Cuba.
Sydney, Australia

Automatic Elec

In to the Governor of Ohio

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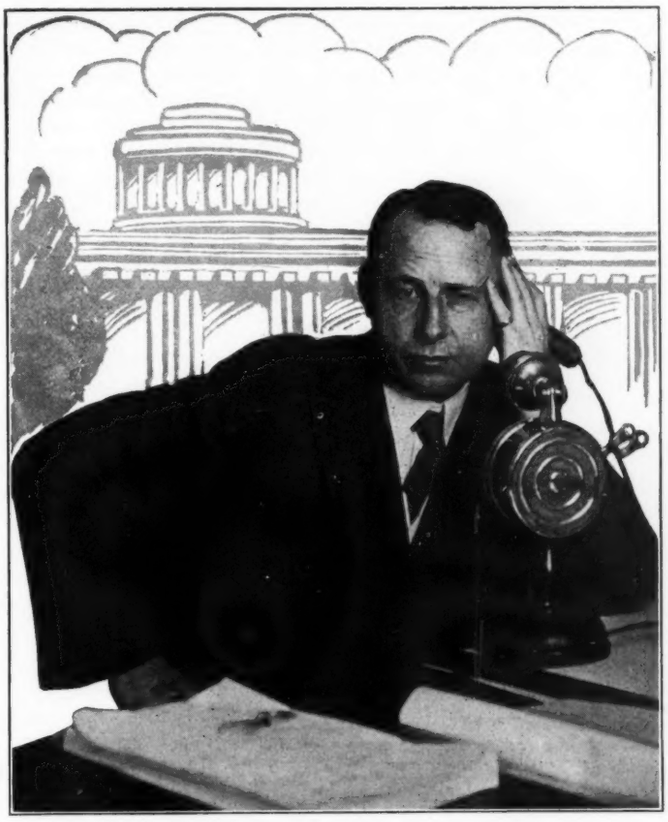

Only Governors are allowed to dial direct from Indianapolis to Columbus, but every Automatic user in Indianapolis makes his city calls without an operator, and when he wants long distance a single turn of the dial gives him the toll operator.

Not only does this mean quick, accurate, satisfactory service to subscribers, but to the company it means freedom from the care and worry of finding and training operators, and relief from the constantly increasing burden of paying operators' salaries.

Furthermore, the maintenance work has been made simple, easy and inexpensive. The central office men no longer spend all their time chasing trouble after it occurs, but by means of regular routine inspection of the equipment, prevent trouble and make it unnecessary for subscribers to complain.

But these advantages of efficiency and economy are not confined to large systems serving tens of thousands of stations. In all parts of America there are telephone companies operating Automatic exchanges having from 100 to 500 subscribers, and they too find Automatic service cheapest and best.

For local and long distance service, for rural lines and for private branch exchanges, the Automatic has proved itself able to give service which wins and holds public favor, and at operating costs far below anything possible with any other equipment.

The Capitals Like It— So Would Your City

The people and the telephone companies in a dozen different capitals — and in more than 150 other places—like the Automatic Telephone.

The people prefer the service because it is quick, accurate, uniform, and easy to use.

The companies prefer the system because it cuts down complaints, makes maintenance easy, and eliminates the cost of hiring, training, and paying operators.

Your subscribers and your company would benefit by having an Automatic Exchange.

Every day of delay means trouble for the users and needless expense to the company. Write now and let us lay the whole matter before you.

1917

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13 years id, the other 13 days built at th same time.

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ric Co., Chicago

before further contracts were made, it was desirable to know how the state looked upon such construction methods.

The commission issued an order granting the application, but reserved the question of capitalization of the extended lines to a time when that subject may be raised. It found that the section to be served was sparsely settled, and that such methods were necessary in order that the demand for service could be granted.

Grief Inherited From Mutual Telephone Organization.

A typical case of the inherited grief of privately-owned telephone companies that succeed mutuals was that recently before the Nebraska State Railway Commission when the Palisade Telephone Co. of Palisade, Neb., applied for an increase in rates.

It began as a mutual company with each patron buying his own telephone. It invaded the town of Palisade and began renting telephones. Following the usual process, dividends were paid and depreciation unthought of. A year ago the owners were glad to sell the plant to Earl Wallbridge for $4,000, the figure he inventoried it at.

Mr. Wallbridge ran the company for a year, at the end of which he made a "bee line" for the state railway commission with a request to increase all rates at flat 50 cents a month. He submitted his books, which showed that he had lost $470 during the year.

The exchange has 258 subscribers, and gives free service to five other towns. This service was furnished at these rates: To residence subscribers owning their own telephones, 50 cents; to those who did not, 75 cents; to business subscribers owning telephones, $1.50; to those who did not, $1.75. A switching charge of 25 cents a month was made.

The books showed that Mr. Wallbridge paid himself $75 a month, and the commission found that as he also acted as lineman and slept in the office so as to answer emergency calls, he earned that sum. It gave him an increase of 50 cents on the residence telephones and 10 cents on switching, but left the business rate as it is. This will give him a revenue on the present basis of telephones $2,704 for the year, with expenses of $2,449.50. He is ordered to set aside 9 per cent. for depreciation and maintenance, and rates will remain as they are until the earnings exceed 7 per cent.

The commission ordered the purchase of all telephones from subscribers. It held that the practice should be discouraged as it interferes with standardization of equipment and therefore with service.

Consolidation at Fulton, Mo., Authorized by Commission.

The Missouri Public Service Commission, on March 20, authorized the Missouri Central Telephone Co., of Fulton, to purchase and consolidate the plants of the Bell company and the Buffum Telephone Co., at Fulton, Mo., and to increase the rates for service.

The exchange operated by the Bell and the Buffum company at Fulton, were both owned by the Bell company. On March 30, 1915, the Missouri Central Telephone Co., which had been formed by M. F. Bell and others with a capital stock of $100,000, filed an application for permission to purchase and consolidate the two plants.

On April 15, 1916, the Missouri Central company filed an application stating that the work of consolidation had been accomplished; that $80,967 had been expended, and asked that the new rate be allowed. The city of Fulton then intervened, insisting that the value of the plant is less than the amount named; that the franchise of the Buffum company has a clause controlling the rates to be charged and that the system had not been in operation a sufficient length of time to determine the revenue to be yielded from the present rate is not ample.

The commission then had an inventory made of the plant, after which it allowed $70,000, as being the value of the exchange, and allowing the increased rates asked for by the telephone company. This order is to become effective May 1. Case 852.

Value Set on Company in District of Columbia.

The Chesapeake & Potomac Telephone Co. and the public utilities commission of the District of Columbia, have reached a tentative agreement on the valuations of the physical properties of the company. The amount named is $6,511,694.

This excludes working capital, including materials and supplies, and consideration of all matters of intangible capital reorganization expenses, franchises, patent rights and other intangibles. These will be taken up later.

Charles L. Pillsbury, chief engineer of the commission, presented the agreement. The telephone company is the last to appear before the commission in valuation proceedings.

Telephone Rate Revision Favored by Minnesota Senate.

The Minnesota state senate went on record last week as favoring a revision of telephone rates in Minnesota.

It adopted a resolution offered by the committee on general legislation, declaring it to be the sentiment of the senate that an adequate appropriation should be made for the use of the railroad and warehouse commission in the attaining of a physical valuation of the properties of the telephone companies doing business in the state and an examination of their books and records "to the end and purpose that a basis may be established for the fixing of telephone charges in the state."

The resolution also declared it to be the opinion of the senate that on being furnished with the necessary funds the commission "should immediately proceed to do all things necessary to establish a basis for telephone rates that will be fair and just, so that relief may be obtained at the earliest possible date."

Texas Pole Tax Case Before United States Supreme Court.

The city of Dallas, Texas, some time ago levied a tax, by ordinance, on telephone poles and wires, at the rate of $2 per pole a year, and 20 cents per mile of wire. The Southwestern Telegraph & Telephone Co. has fought the tax through Texas courts, and it is now before the Supreme Court of the United States.

Final Arguments Heard in Colorado Franchise Case.

Final arguments were completed by the Colorado Supreme Court on March 13, in the appeal of the Mountain States Telephone & Telegraph Co., from the decision of the Denver district court, in 1914, denying to the telephone company the use of the streets and alleys of Denver for the poles and wires of the company. The decision is expected to have a bearing on use of streets in every city in the state where the company has no franchise.

Wire-Tapping Bill Introduced into New York Legislature.

A most drastic wire-tapping bill was introduced in the senate of the New York legislature March 15. The bill will absolutely prevent the tapping of telephone wires by any one, except possibly the federal government in the event of an emergency for national defense. It will not permit the tapping of wires by, or by orders of the police department or district attorney.

Highest Kentucky Court Rules on Interstate Message.

A telegraphic message, notwithstanding the fact that both the place from which sent and at which received are in Kentucky, is an interstate message if it is routed out of the state, according to the negative of a decision by the Kentucky Court of Appeals.

This was a case in which the highest court of the state reversed the Graves Circuit Court in a judgment obtained by R. E. Lee, of Mayfield, Ky., against the Western Union Telegraph Co., calling for recovery of $1,250. The telegram, sent from Lebanon, Ky., was routed through Nashville, Tenn., and became an inter-

state telegram, the limitation of liability stated on the back of the blank therefore applying. This was not to exceed the cost of the message.

Bill to Permit Michigan Cities to Operate Telephone Lines.

After Representative Ormsbee's proposed amendment to the constitution, giving cities of Michigan the right to engage in the telephone business was amended so that it would be submitted in November next year instead of the coming April election, it was agreed to in the house committee of the whole on March 14. Opposition is expected when the resolution comes up for final consideration in the house.

Cuming County (Neb.) Company Seeks to Issue Stock.

The Cuming County (Neb.) Independent Telephone Co. has asked permission of the state railway commission to issue $16,700 of new stock to take up current indebtedness to banks and stockholders. The money thus borrowed has been used in building extensions and improving service, expenditures made necessary by the demands of the business but which could not be financed at the time debts were contracted because of the condition of the money market. This has improved so that financing is possible.

The Cuming county company is one of the strong Independent companies of northeastern Nebraska, in Bell territory. Its last return to the commission showed a capital stock of $33,360, divided among 279 stockholders, and assets of $49,665. O. M. Thompson, former state senator, is president. Its home office is at Wisner. It operates 758 telephones, 245 city and 513 farm.

Court Holds Patrons Must Pay Rental in Advance.

Subscribers of the New York Telephone Co. must pay in advance for telephone service and if such payment is not made the corporation has the right to discontinue service.

This decision was made by Justice Howard of the supreme court, on March 17, in the case of Evanetta Hare, of Troy, N. Y., against the New York Telephone Co., which came up on application by Attorney James Farrell, representing Miss Hare, for an order directing the company to restore service to her at her residence, 29 Eighth street, a service which was discontinued for an alleged breach of contract between her and the company.

Act to Give Reduced Telephone Rates to Newspapers.

Hon. A. Pattangall, of Augusta, counsel for the Maine newspapers, presented a new draft on the act requiring the New England Telephone & Telegraph Co. to give reduced rates to newspapers at the hearing before the committee on legal affairs March 13. The new draft provides that the New England company shall allow all newspapers in Maine, members of any press association, a discount of 33⅓ per cent. from the regular commercial rates on all toll charges for messages originating in Maine.

Mr. Pattangall explained the reduced rates offered by the Western Union and Postal Telegraph companies for press service of 33⅓ per cent. day rate and 66⅔ per cent. night rate, and also of special rates on all news from state capitals. He said that the bill asked that the New England company make a reduced rate of 33⅓ per cent. upon all messages originated in Maine in order that the Maine newspapers might cover the Maine field as they should.

Bills Regarding Gross Receipts and Franchise Taxes in Maine.

A bill has been introduced in the house of the Maine assembly by Representative Barnes of Moulton, relating to the computation of the tax of telephone and telegraph companies. The amendment provides that when the gross receipts of a telephone or telegraph company exceed $1,000 and do not exceed $5,000, the tax shall be 1¼ per cent of such gross receipts; and increasing the rate of tax one-quarter of 1 per cent. for each additional $1,000 or fractional part of such gross receipts, provided that the rate shall in no event exceed 7 per cent of such gross receipts.

Another bill has been introduced by Representative Barnes to amend the revised statutes relating to the taxation of corporate franchises. The act provides that every corporation shall pay an annual franchise tax of $10, provided the authorized capital does not exceed $50,000; of $25 provided the authorized capital exceeds $50,000 and does not exceed $200,000; of $75 provided the authorized capital exceeds $200,000 and does not exceed $500,000; of $100 provided the authorized capital exceeds $500,000 and does not exceed $1,000,000; and a further sum of $100 a year for each $1,000,000 or any part in excess of $1,000,000.

How One Small Company Applied for Rate Increase.

The Washington & Western Telephone Co., which operates a small exchange at Verdigre, Neb., has asked for permission to increase rates.

The letter of the secretary to the Nebraska State Railway Commission merely said that it wished to increase rates on private lines from $1.25 to $1.75 a month. It was written in pencil on a sheet of letter paper torn from a tablet.

The commission sent back a long list of requirements relating to investment, revenue, expenses, character of equipment, etc., that is expected to open the eyes of the management to what modern corporation regulation by the state means. The company is a small one with a $6,000 plant.

Servant's Action for Injury Against Telephone Company.

It was competent to prove that the gang of men with whom the plaintiff worked complained to the foreman that the force was not sufficient to handle the telephone poles they were loading, and, his reply admitting it, with the order to go on, since it was a part of what was done at the time. In a servant's action for injuries against a telephone company and its foreman, the court held it was competent to show who was in charge of the work, and that the foreman was the man.—Hollifield vs. Southern Bell Telephone & Telegraph Co.; Supreme Court of North Carolina; 90 Southeastern, 996.

Ontario Government to Aid in Physical Connection Appeal.

The Ontario government has shown its sympathy with the rural telephone companies in their effort to secure long distance connection by putting $1,000 in the estimates towards the costs of the recent appeal to the supreme court against the order of the railway board regarding long distance connection, taken by the Canadian Independent Telephone Association.

Iowa Railroad Commission to Rehear Inductive Interference Case.

The Iowa Railroad Commission has granted the application of the Iowa power companies for a rehearing of the case relative to interference of high tension lines with telephone lines.

It is probable that the question as to who should pay the expense of remedying the evil effects on telephone lines (for instance, making the grounded lines metallic), will be the principal, if not the only question reopened.

Bill to Exempt Small Companies from Taxation Killed.

A bill exempting Texas telephone companies having a capital stock of less than $30,000 from the payment of a gross receipts tax to the state failed of passage on third reading in the house of the Texas legislature, and the vote by which it was killed was reconsidered and tabled.

Complaints Against Switching Rate at Kearney, Neb.

The Kearney (Neb.) Telephone Co., an Independent corporation that recently purchased the Bell exchange in that city, under a consolidation order of the state rail-

way commission, and secured what its president, Warren Pratt, had hoped was a more or less permanent rate adjustment, is in trouble already.

J. W. Marlott and others, a committee representing 250 subscribers on the Union Valley Mutual Telephone Co. lines, filed a complaint on March 23 as to rate and service in the city and on switched lines. The commission, after a full hearing as it supposed, issued an order last December, permitting the Kearney company to increase its switching rate for the Union Valley line from 25 cents to 35 cents a month. No date has yet been set for the hearing of the committee complaint.

Ohio Certificate of Convenience Law Remains Intact.

The Ohio senate has killed the Gilmore bill, thus leaving intact the present law requiring a "certificate of public necessity" from telephone companies before they can operate in competition with established systems.

The Gilmore bill sought to require such a certificate from all new utilities, except those municipally owned. By the reconsideration of the bill the mutual telephone companies lost the exemption from the present law, which was the only change sought to be made by the amended Gilmore bill.

Extension of Keystone Voting Trust Is Assured.

The extension of the Keystone Telephone Co. voting trust from February 1, 1917, to February 1, 1922, is assured by the assent of more than 50 per cent. of the stock. The former voting trust expired on February 1. Until the formal completion of the agreement for the extension has been completed, the extended voting trust certificates cannot be listed and trading on the exchange will be in the stock certificates.

Summary of State Commission Hearings and Rulings.

ALABAMA.

April 11: Hearing at Montgomery in the case of City of Birmingham vs. Southern Bell Telephone & Telegraph Co., in which the city is asking for a reduction from the present rate of $3 for residence telephones and $6 for business telephones. The rates are alleged to be out of proportion to the capital invested and a reduction is demanded.

CALIFORNIA.

March 16: Application filed by the Roseville (Cal.) Telephone Co. for authority to sell $9,020 of its stock, and to use $4,043 worth to reimburse the company for expenditures and improvements, and the balance to be spent on authority of the commission to be obtained from time to time.

IDAHO.

March: Complaint made against the disconnecting of the Long Valley Mutual Telephone Co. with the Mountain States Telephone & Telegraph Co.'s line at Cascade. The commission took the matter up with former company, owing to the fact that the failure to make connections at Cascade prevents telephone service to McCall, Lardo, Roseberry and Van Wyck. The Long Valley Mutual replied the connection was cut at Cascade on account of the poor service. The commission will make every effort to have the connection made again.

March: Application filed by the Telephone Service Co. for certificate of convenience and necessity to give telephone service to the town of Roberts, taking over the business of the Market Lake Telephone Co.

March 27: Hearing at Idaho Falls in the case of Attorney General T. A. Walters vs. the Inter-Mountain Telephone & Telegraph Co.

ILLINOIS.

March 26: Hearing at Chicago in the case of the city of Park Ridge vs. Chicago & Northwestern Railway Co., Des Plaines Telephone Co. and Public Service Co. of Northern Illinois, relative to petition for separation of grades at crossing of respondent company at Park Ridge. Case 5986.

March 27: Hearing at Chicago on application of Chicago Telephone Co. for order authorizing the issue of $6,000,000 of its capital stock. Case 6495.

March 27: Hearing at Galesburg on the application of the Galesburg Union Telephone Co. for an order for toll facilities connecting the Central Union Telephone Co. and the American Telephone & Telegraph Co.'s toll lines in the city of Galesburg and vicinity. Case 5738.

March 28: Hearing on petition of the city of Peoria to compel the Central Union Telephone Co. to reduce its rates to subscribers in the city of Peoria. Cross petition of receivers of Central Union company filed. Case 3043.

March 30: Hearing on complaint of Myer J. Stein against the city of Chicago and the Chicago Telephone Co., as to service and rates of Chicago Telephone Co. at Oak Park. Case 5285.

MINNESOTA.

April 4: Hearing at St. Paul on the application of the Watertown Telephone Co. to purchase the local exchange of the Northwestern Telephone Exchange Co. at Delano.

MISSOURI.

March 20: The commission authorized the Missouri Central Telephone Co. to purchase and consolidate the plants of the Bell company and the Buffum Telephone Co. at Fulton and to increase the rates for service.

NEBRASKA.

March 20: Application of Hazard Telephone Co. to issue $2,175 stock to take up notes for money borrowed to make extensions when stock market was poor, granted.

March 20: Application of Pierce Telephone Co. to revise farm line switching rates. Appearance of applicants and respondents; case continued for 60 days and permission given applicant to make further showing.

March 20: Application of Southeast Nebraska Telephone Co. for request to increase rates for residence telephones on Falls City exchange from $1 a month to $1.50 for selective ringing instruments; showing ordered.

March 21: The commission granted the application of the Nebraska Telephone Co. for permission to withdraw four-party line rates at the exchanges at Boelus, Cushing and Elba, there being no four-party lines now connected with exchanges, and the company desiring to no longer offer such service.

March 21: Antelope County Telephone Co. given permission to publish 10-cent general line rate call.

March 22: Authority granted the Hamilton County Farmers' Telephone Association to publish rate of 50 cents less than the regular residence rate for each of two families in the same house and using the same service.

March 23: Permission granted the Wyoming & Nebraska Telephone Co. to extend rural line from present terminus to Sparks in agreement with subscribers.

March 23: Complaint filed by a committee representing 250 farmers on the Union Valley Mutual Telephone Co. lines as to the rate and service of the Kearney (Neb.) Telephone Co. in the city and on switched lines.

April 3: Hearing on application of Nebraska Telephone Co. for permission to revise exchange schedules at Wakefield and rates on two-party lines at Howells.

April 4: Hearing on application of Linwood Telephone Co. for permission to increase business rates from $1.50 to $1.75 a month and residence and farm rates from $1 to $1.25.

April 26: Hearing on complaint of W. C. Bender and others against the Lincoln Telephone & Telegraph Co. Misrepresentations of agents of the company are alleged. Parties on rural lines out of Yuban exchange were formerly given grounded line 20-party service. In soliciting for change to metallic circuit 10-line maximum party service, agents of the company are alleged to have stated that legislative committee of farmers' union approved rates fixed in commission order regulating such service.

NEW YORK.

March 30: Hearing at Utica on the complaint of the Clinton Board of Trade against the New York Telephone Co. as to rates.

PENNSYLVANIA.

March 15: Complaint filed by the Morrison's Cove Telephone Co., operating in Blair and Buford counties, that the Bedford & Fulton Telephone Co. plans to construct parallel lines. The question is also raised whether the Bedford & Fulton is an incorporated company.

March 15: Agreement reached in rate controversy between the Central District Telephone Co. and the Pittsburgh Chamber of Commerce, that will result in a reduction of $314,000 a year on all measured service rates.

March 19: Complaint filed by H. E. Andrews, of Harrisburg, charging that conversations were interrupted and overheard through the state capitol branch exchange. Objection was also made to certain regulations regarding removals and installation of instruments.

WEST VIRGINIA.

March 15: Petition filed asking the commission to require if possible the installation of one switchboard for the handling of exchange service of four telephone companies operating at Webster Springs. These companies are the Cowen, the Newville, the Kanawha and the Beverly and Marlinton telephone companies. J. S. Cutlip, president of the Webster county court, is one of the petitioners. This court claims that the law requires the county to pay for telephone service in the offices of the county officers, but that it is an imposition on the public for four telephones to be paid for.

Financial Statements and Reports

Balance Sheets and Statements of Earnings and Expenses of Telephone Companies, Covering Operations During the Past Year, Show Good Results in Spite of Increasing Cost of Materials—Greater Economies Exercised—Officers Elected

San Marcos (Texas) Company Issues Annual Report.

The San Marcos Telephone Co., of San Marcos, Texas, reports gross revenues for the year ended December 31, 1916, of $14,312. After deducting the expenses, which amounted to $9,795, and making other deductions for taxes and interest, dividends to the amount of $1,900 were paid and the balance, $1,698, transferred to the surplus account.

The balance sheet of the company as of January 1, 1917, follows:

ASSETS.

Intangibles	$ 5,000
Central office equipment	6,695
Station equipment	9,110
Exchange lines	15,748
General equipment	1,553
Total plant and equipment	$38,106
Other property—	
Cash	$ 190
Due from subscribers	516
Materials and supplies	1,050
Total	$39,862

LIABILITIES.

Capital stock	$30,000
Accounts payable	739
Depreciation reserve	9,105
Other credit accounts	18
	$39,862

The directors of the company include: G. G. Johnson, president; G. W. Donalson, vice-president; Merton Swift, manager, D. C. Johnson and I. W. Wood.

Annual Report of the Keystone Telephone System.

Net profits of $399,823 are reported by the Keystone Telephone Co., of Philadelphia, Pa., for the year ended December 31, 1916, an increase of 10.07 per cent. over the preceding year, and the increase in the number of telephone stations during the past year is reported to be the largest since 1906.

The properties included in the Keystone system consist of the Keystone Telephone Co., of Philadelphia, and the Eastern Telephone & Telegraph Co. It also controls the Camden & Atlantic Telephone Co. through ownership of a majority of its capital stock.

In the accompanying table is given a comparative statement of earnings and expenditures for 1916 and 1915.

The total capital expenditures for the year were $287,732, and to provide for part thereof $100,000 of the bonds of the company were sold through its bankers, the balance being provided out of earnings credited to the renewal reserve fund.

The holders of the preferred stock of the company have received their usual 6 per cent. dividend, and in addition, as in the previous year, 4 per cent. has been paid on accumulated dividends.

The combined balance sheet as of December 1, 1916, follows:

ASSETS.

Cost of property, including stock		$15,817,074
Materials and supplies on hand		44,508
Cash at banks and on hand		202,510
Accounts receivable		120,098
Reserve fund, cash		40,000
Prepaid accounts, etc.		236,099
Total assets		$16,460,289

LIABILITIES.

First mortgage 5 per cent. bonds, issued by the Keystone company		$ 6,425,000
First mortgage 5 per cent. bonds, issued by the Eastern company		250,000
Interest on bonds		161,667
Current accounts, reserves, and other current liabilities		202,189
Total liabilities		$ 7,038,856
Capital stock issued:		
6 per cent. preferred by the Keystone company of New Jersey	$1,936,850	
Common by the Keystone company of New Jersey	5,000,000	
		$ 6,936,850
Surplus and Reserve:		
Renewal reserve	$1,563,176	
Surplus, December 31, 1916	921,407	
		2,484,583
		$16,460,289

PROFIT AND LOSS ACCOUNT.

Gross earnings	$1,470,143
Operating and maintenance charges, including taxes and provisions for doubtful accounts	740,220
Balance available for interest and reserve, etc.	$ 729,923
Interest charges	330,100
Profit for year before, reserve for depreciation, etc.	$ 399,823
Distribution:	
Discount on bonds	$ 11,500
Added to renewal reserve	170,117
Added to surplus	101,995
Preferred stock dividend paid 1915, 6 per cent.	116,211
	$399,823

SURPLUS ACCOUNT.

Surplus, December 31, 1915	$ 896,886
Added December 31, 1916, as above	101,995
	$998,881
Less:	
4 per cent. dividend on preferred stock, cumulative account	$ 77,474
Surplus December 31, 1916	$ 921,407

The officers of the company are as follows: Nathan T. Folwell, president; James C. Jones, first vice-president; Edward M. Cooke, second vice-president; William W. Wharton, secretary and treasurer, all of Philadelphia.

The board of directors includes Marcus Beebe, of Boston, Mass.; John I. Bishop, George Burnham, Jr., Percival E. Foerderer, Nathan T. Folwell, Clarence L. Harper, James C. Jones, George Kessler, Louis J. Kolb and Michael Murphy, all of Philadelphia, and Heulings Lippincott, of Camden, N. J.

Volume of Traffic in the Various Chicago Exchanges.

The average daily number of originating calls in the city of Chicago and the suburbs during 1916 was 2,500,000. On the two days preceding Christmas, the total number of calls reached 2,900,000 daily. This was an average increase of 300,000 calls per day over 1915. Only a few years ago the average daily number of calls was stated in thousands, but now the figures are in hundred thousands.

New System at Hurmence, Iowa.

The Hurmence Telephone Co. has just completed the erection of a new exchange building in New Hampton and the installation of new common battery equipment.

	1916.	1915.	Increase.	Increase per cent.
Gross earnings	$1,470,143	$1,361,754	$108,389	7.96
Operating and maintenance charges, including taxes and provisions for doubtful accounts	740,220	679,584	60,636	8.92
Balance available for interest and reserve, etc.	729,923	682,170	47,753	6.00
Interest charges	330,100	321,157	8,943	2.78
Net profit for year	399,823	361,013	38,810	10.07

Earnings and Expenditures of Keystone Telephone Co.

Practical Subjects—Discussions

Sunshine and Shadows Along the Telephone Trail.

By Well Clay.

Baby sick at midnight,
Mother all alone,
Cannot leave her darling,
Has no telephone.

The question is — How much is a telephone worth to a patron?

Is there any way to measure just what the value of is? Could the rates be determined from values thus ascertained, if there was any way to figure them out on such a basis? If there was, the revenues of most telephone companies would take a sudden jump. Most people could not pay their telephone charges at all, especially rural patrons.

The price of a good horse saved would certainly be in the consideration every year or so, and if a human life were saved now and then, the charges would mount very rapidly. There might be a schedule of prices arranged for beforehand and different values might be set on different members of the family beginning with baby and tapering off with mother-in-law.

Then, too, aside from the value in life saving, there would have to be figured out the saving in work and time of traveling about to get matters arranged. There would be the value of knowing the markets, the state of the weather to be expected, and the local news of the neighborhood.

There would be a thousand and one other considerations to be taken into the reckoning. Even then after a rate could be figured out that would be entirely equitable for the telephone service of one family, the fact that the next patron down the road might set a different value on different items would knock the whole thing into confusion again.

The other man might possibly start his table of values with his best team of horses and end up with his latest wife. Some might demand a rebate for the telephone having saved a poor relation who would not have been missed.

It is hard, indeed, to tell just how much a telephone is worth just as it is hard to say what a drink of water would be worth. The value of a drink to a man in the desert and a man in a flood would necessarily vary considerable. There is one fact, however, and that is that a telephone is worth *something* to every household and the only way out in rate-making is always a compromise, the same as the taxes.

The quality of the service, the amount of use it is put to and its availability at all times, are always factors to consider. There seems no justice in charging a rural subscriber $1.25 per month for service on a line when he lives many miles from town and charging a merchant $2 for service who trades next door.

Yet the rural subscriber has to get along with a party line while the merchant has a single station on a metallic circuit. The merchant is supposed to make a profit from his telephone service, aside from it merely being a convenience for conserving effort. But the rural patron, with the exception of the markets, is hard put to trace with any degree of success, profits accruing from his use of the telephone that are clearly definable.

The merchant, too, as a general rule, allows any of his numerous patrons to use his telephone every day when they happen to be in his place of business. That sort of evens up the score to some extent. The only way to do is that time-honored custom of doing the best you can under the circumstances and let it go at that.

The question is, first, to set a price for the service and the next is to get the money for rendering that service.

In a recent article I noted a postal-card system of mailing accounts to patrons, which we had used for some time with great success and no objections. This card seemed to have attracted the notice of some of the brethren. Responses have come in from some with suggestions of other improvements along this line which it seems to me could be worked into some kind of a standardized system, if we put our minds to it at some of the telephone conventions.

Two cards are reproduced, which I received from Friend H. E. Wirt, of Lewistown, Minn. They are self explanatory.

The postal card seems to be used for collecting toll calls from people who have no telephones, or from patrons who have paid in advance, and who send messages which are charged to their account afterwards.

It is a good scheme and one which relieves many patrons from the necessity of going personally to their neighbors, who may have used their telephone for lack of one of their own, and collecting the toll calls which have, of course, been charged to the party having the telephone. It is always embarrassing to ask a neighbor for 10 or 15 cents for messages, but it is not always convenient to pay the charge yourself and say nothing about the matter, as some do.

A card mailed to the party sending the message will in most cases bring them direct to the office to pay the amount which will then be credited to the account to which it had been charged, and relieve the regular patron of the expense.

In case it is not paid by the party calling, then, of course, it will remain on the books against the patron until he settles the account. The fact that the company agrees to send out a card and attempt to collect direct, does not in any way relieve the patron of the responsibility he took when he allowed a non-subscriber to use his telephone for long distance purposes.

We have been using some similar schemes for some time and I am including a copy of the postal on which the bill is sent, along with the one Mr. Wirt has. You can take your choice and use the scheme if it suits you.

Another very fine idea, which Mr. Wirt

Lewiston, Minn.,.....191..

Your toll account with the

Lewiston Telephone Exchange Co.,

for Long Distance messages, amounts to

.....*DOLLARS*

Your early attention to this account will be very much appreciated.

Request: Please pay monthly.

NOTICE—This Company is obliged to pay monthly all toll charges to the Long Distance Company.

Hutchinson, Minn.,

This is to notify you that a message has been charged up to Telephone No. ..... in residence of ..... on account of your call on ..... to Telephone No. ..... from whom we will collect ..... cts. unless paid direct to this office before the first of the month.

Hutchinson Telephone Exchange Co.

Wording and Arrangement of Two Postal Cards Used in Toll Collecting.

has, is a card which he uses when a messenger is sent out after a party wanted on the telephone. This card contains some very wholesome advice to the party wanted. It winds up with a gentle admonition to forthwith provide himself with

LEWISTON TELEPHONE EXCHANGE CO.
MESSENGER CALL.

M ....., you are notified, by this,

that M ..... at .....

is calling you to this office for telephone communication. Kindly respond, as party calling must pay messenger expense, whether you respond or not.

Dated .....19..

Time ..... M. ..... Operator.

(OVER)

One Side of Card Used to Notify Called Party When Messenger Is Sent.

that necessary modern convenience, *the telephone*, and save necessity for future notifications of the same sort and also the price of messenger fees to the other fellow. It is a good way to both educate and advertise. On the back of the card is the following message to the called party:

MESSENGER SERVICE.

With a view of doing away with some of the inconveniences caused by messenger service, your attention is respectfully called to the following:

I.

Answer your messenger call promptly, for party calling is waiting while the messenger is calling on you.

II.

Remember this: The party calling must pay messenger before he delivers your call.

III.

If you fail to respond, or messenger fails to find you, the party calling gets nothing for his money.

IV.

Is it not a fact that, where a party pays messenger expense to get you, he is put to an expense that could be saved, if you had a telephone?

Have a telephone; it is the greatest convenience at your command. You owe it to the party calling.

We are pained, however, at some of the conclusions which Mr. Wirt has come to in his experiences in keeping farm-line telephones supplied with batteries. Mr. Wirt says:

"We are at present working on a plan to check up on our battery expense, or rather check up the farmer. We have reason to believe that our batteries work well on gasoline engines.

How would it work to have a form fixed up for the subscriber to sign when he calls at the office for new batteries, assuring us that he has had none for two years? It seems to me that it would not be out of place to have a receipt, with his name signed, showing the date he got his last batteries. These forms could be carried by the repairman, and he could have them signed when he installs a new set."

This certainly looks to me like a good thing to do in these days of large prices and small batteries, when it takes about three sets to do a rural subscriber for a year against one set for a town telephone for a couple of years. We would like to hear from some of the boys who have this scheme all worked out and learn how it works and satisfies the rural subscriber.

APHORISM: The same medicine doesn't cure in all localities.

One Hundred Per Cent. Collections and Getting Business.

That the subject of collections is one in which telephone men should be more interested than they are is evidenced by a letter recently written to W. M. Brown, auditor of the Central Home Telephone & Telegraph Co., of Louisville, Ky., by M. B. Farwell, of Christman, Ill. Mr. Farwell heartily indorses the statements in an article by Mr. Brown, which appeared in TELEPHONY of March 17. Mr. Farwell's letter, which relates an experience of his own, relative to collections, is as follows:

"Your article in TELEPHONY of March 17 has been read by the writer with a great deal of interest. Your statements sure hit the nail on the head.

What is the use of going through all the motions if we don't get the money? Why waste time with a customer who doesn't and can't promptly pay a little 2 by 4 telephone bill? If he can't pay a small bill, it's a cinch he can't pay a big one. A man who is hard up will pay his small bills and when he gets so hard up that he can't pay small bills, look out — something's going to drop.

When I first landed in this job, the uncollected list was something awful — accounts of $40, $50 and $60, just think of it! And this is one of the oldest plants in Illinois. I took prompt action and commenced taking out telephones, and was the most unpopular man who ever struck the town.

That was three years ago, but I won out. December 31, 1916, the uncollected account on my three exchanges was $107.50 out of a total gross revenue of $15,000, and February 1 saw that all paid.

Of course, we must give service — that goes without saying — but why not complete the job? Your customers respect you and your business and you respect yourself.

I might add that we have a nice steady gain in subscribers since prompt collections were enforced."

A Home-Made Battery for the Operator's Transmitter.

In the department, "Practical Subjects — Discussions," of TELEPHONY, of January 27, an article by G. V. Murray, president of the Campbellsville Telephone Co., Campbellsville, Ky., was published. Mr. Murray described a wet battery, which he has used with excellent results, in fact, he terms it "the best wet battery on earth" — and requested any one using it to write him as to the results obtained.

Since the publication of the article, Mr. Murray has received many letters relative to these batteries. Knowing the amount of money saved his company yearly by these batteries, Mr. Murray has sent TELEPHONY the following letter he recently received from I. B. Duckett, manager, the Tri-State Telephone Co., of Harlan, Ky.:

"I noticed what you said about batteries for operators' sets. We were using bluestone cells at all of our exchanges and always have. When bluestone went to 60 cents a pound, I decided that it was too much, and determined to try out the battery you spoke of, at my own expense. So I put them on and will say they proved so much better than the old bluestone cells that I would not have anything else. They are practically inexpensive and you could put them anywhere, they are so easily kept clean.

After I have tried them out for about one month, Mr. Chandler, the president of the company, was here and I showed them to him, explaining how simple and inexpensive they were. He was so pleased with them that he subscribed for one TELEPHONY for me and is going to have them put to use in all his magneto exchanges.

The total cost of installing the batteries was only $1.25 and the other cells would have cost about $6 to renew — a saving of $4.75 on first cost.

Every Independent magneto exchange should know and try this out, as they are surely a better battery than anything else I have ever tried."

Who Knows Whereabouts of A. E. Schneider?

A. E. Schneider, who is believed to be engaged in telephone work, is urgently desired to communicate with his wife. Mrs. Schneider, who lives at 25 Chandler avenue, Evanston, Ind., is seriously ill and

desires the presence of her husband. Anyone knowing of his whereabouts is earnestly requested to communicate with Mrs. Schneider at the address given.

Using Automobiles and Trailers in Nebraska.

For the past few years, occasionally, we have noticed advertisements and news items in TELEPHONY treating on the use of auto trailers for use of telephone companies.

About three years ago we secured the wheels, axles and springs of an old Ford car — about 1908 model — from which we rigged up two trailers for our Fords: one for our Scribner car, and one for our North Bend car.

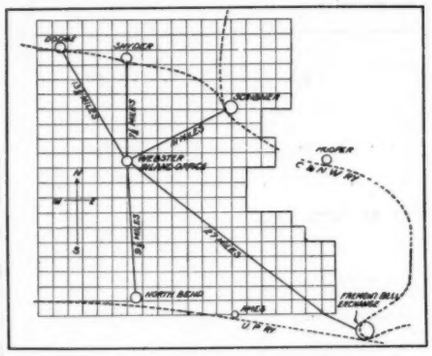
The accompanying photograph shows the Scribner outfit ready for a 12-mile trip in the country to replace three broken poles on a farm line. The "Little Old Ford" is loaded with all necessary tools and material, together with three 6 in. 25 ft. poles on the trailer. By the way, there are plenty of hills to climb, "but we get there just the same."

We depend entirely on our two Fords for transportation, and our three years' experience proves to us that the automobile is the biggest money saver we have.

The first cost of our Scribner car was $540. We have had it over-hauled twice and new parts placed where necessary, at a cost of practically $125 each time. Our average monthly expense for gas, oil and tires is less than $20, and our North Bend car is even doing better than that.

Our trailers cost us, completely rigged as you see it, $12 each, less the tires, which we provide from old front tires taken from our cars after they have about served their time there. Owing to the fact that it is necessary to carry only about 35 pounds pressure on the tires of the trailer, these old tires serve that purpose nicely.

In connection with this, it might be of interest to state what our system consists of, how it is situated, and how we take care of it. I am enclosing a rough sketch showing the location of our five exchanges —Scribner being the headquarters—which will give some idea of the territory we cover, considering the number of subscribers we have.



Territory of the Farmers' Telephone Co. of Dodge County, Neb.

We are operating a total of 1,371 telephones, divided as follows:

Scribner exchange has 147 town and 200 farm telephones.

North Bend exchange has 223 town and 206 farm telephones.

Dodge exchange has 93 town and 176 farm telephones.

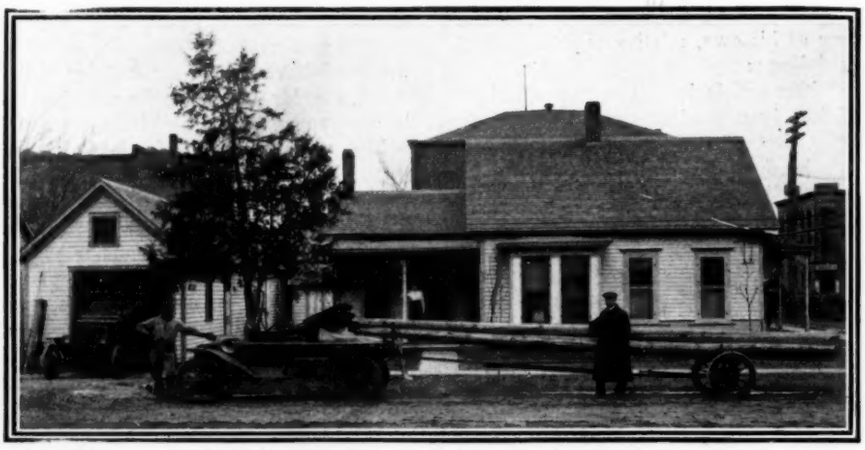
Snyder exchange has 36 town and 61 farm telephones.

Webster exchange has 2 town and 158 farm telephones.

At Fremont 69 telephones are switched by the Bell exchange. This system covers the western part of Dodge county, Neb., a territory about 18 to 20 miles. Two troublemen, together with the beforementioned Fords, take care of all trouble and do all installing. However, during the summer months, we hire extra help for construction of new, and the rebuilding of old lines.

We surely think a whole lot of our "little old Fords" and their trailers. We couldn't keep house without them.

P. B. Cumings, General Manager.
Farmers Telephone Co., of Dodge County.
Scribner, Neb.



Loaded Auto and Trailer of Scribner, Neb., Exchange of Farmers' Telephone Co.

Southern States Association Plans for Big Convention.

Preparations for the tenth annual convention of the Southern States Independent Telephone Association have been begun at Louisville, Ky., where the convention will hold its sessions on May 24, 25 and 26. The headquarters of the convention will be at the Louisville Hotel, where the business sessions will be held.

President S. M. Heller, who is also general manager of the Central Home Telephone & Telegraph Co., has named the program committee which will shortly announce the formal program for the meetings. It is composed of Terry W. Allen, of Jackson, Tenn.; W. H. Bryant, of Mobile, Ala., and J. C. Duncan, of Knoxville, Tenn.

The local committee on arrangements for the convention is composed of W. B. Fisher, commercial manager for the Louisville Home Telephone Co.; Minor Corman, superintendent of the Central Home Telephone & Telegraph Co., and J. B. Wilkinson, Louisville branch manager for the Stromberg-Carlson Telephone Mfg. Co.

This committee is proceeding on the expectation that several hundred members of the organization and other visitors will be present. It is expected that the United States Independent Telephone Association will be represented by its officers and directors.

The three days selected for the convention, the last three days of the third week in May, ordinarily the prettiest season of the year in Kentucky, will find the spring races in progress in the city, something that likely will prove an attraction to a few of the visitors, as a spectacle, now that there is so little running racing in the country. An interesting program is promised and a rousing convention is predicted.

Indianapolis Commercial Men Entertained at Banquet.

The employes of the commercial department of the Indianapolis (Ind.) Telephone Co. were guests of the company directors at a banquet given in the Independent Turnverein clubrooms on North Meridian street on the evening of March 16. Fifty-one members of the commercial department and about 25 guests from other cities attended. The occasion was in celebration of the installation of the automatic system, which was placed in operation at midnight, March 17.

G. B. Wellbaum, head of the department, was toastmaster and introduced William Fortune, president of the company; Louis Hollweg and George G. Snowden, directors, who, besides E. R. Niehr, of Chicago and J. H. Ainsworth, of Columbus, Ohio, made short addresses.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

636. What effect follows the compression of a gaseous mixture in the cylinder of the gas engine which tends to cause premature firing of the charge?

637. What is the most pronounced advantage of the Diesel and semi-Diesel types of oil engine?

638. Describe the Diesel cycle of operation.

639. Describe the semi-Diesel cycle of operation.

640. Explain the division of internal combustion motors into explosion engines and combustion engines.

641. Outline the two methods of securing regulation of speed in the internal combustion engine.

642. Why should the fly wheel for an internal combustion motor be heavier than one for a steam engine of the same rating?

Practical Talks Among Ourselves.

In the Fosterville exchange the storage batteries were in excellent condition. Not only did the wire chief insist upon regular inspection and the keeping of permanent records as to the voltage and specific gravity of electrolyte of the different cells, but he insisted upon regular and sufficient charging.

The entire battery plant, comprising several sets of cells, was given periodical over-charges in order to clear up irregular cell conditions. As a result, all the cells were uniform as to the voltage across their terminals at the end of the charge. In any one set, the specific gravity of each cell was always found to be approximately the same for any given condition of charge.

While this kind of painstaking and careful treatment of the storage batteries insured their fine condition, the over-charges and regular charges required the expenditure of considerable electric energy. The monthly power bill for the operation of the exchange power plant was an element of noticeable importance in the operating cost.

In the battery plant there were not only the two sets of main exchange battery, but also another set which was connected in series with the main battery to provide battery feed at higher voltage over cable conductors to some of the private branch installations. This additional "booster" set of battery was of smaller ampere capacity than the main battery, but, owing to its relation to the main battery, it was necessary to charge it without the use of any ground connection at the generator terminals.

The wire chief had arranged his work so systematically that he found it possible to devote more time to the routine care of the central office equipment than had been possible formerly. General inspection applied to both the substation equipment and the switchboard, had repaired trouble *before* it occurred with resulting improvement in service and reduction in cost of maintenance.

Not only the cost of maintenance of the equipment, but also the cost of operating the equipment came under scrutiny, owing to the increased freedom from detail secured by improved methods. The matter of charging the storage batteries in the exchange would not permit of any reduction in the amount of energy sent through the cells without detriment, but this same amount of energy might be produced, it was thought, at less cost by the use of more cheaply-operated charging equipment.

The planing mill in Fosterville derived the power for the operation of its machinery from a gas engine using natural gas at a cost of 20 cents per 1,000 cubic feet. In conversation with the mill manager, the wire chief learned that the total monthly cost of the power for the mill was not much greater than the monthly power bill under existing conditions in the telephone office.

It did not require an engineering study to determine that the mill required and used a great deal more power than the telephone office batteries required. It seemed reasonable to suppose that the production of power for the operation of the telephone office by the same method that was employed in the mill would effect a monthly saving in the total cost of power.

At times the mill was embarrassed, however, by a shortage of the gas fuel for the engine. While this was annoying to the management of the mill, the wire chief knew that any similar interruption of service, due to this cause, would be almost fatal to the telephone company. It was decided, therefore, to retain the present mercury arc rectifier equipment in working condition *whatever* was done in the way of installing an additional source of power.

In order to make up the estimate for the proposed installation of the gas engine, it was necessary to determine the size or rating needed. Careful consideration of this aspect of the matter led the wire chief to the following decision:

The storage plates in the main battery of the existing equipment were of a size requiring a normal charging current of 20 amperes. The *jars* in which these plates were installed, on the other hand, were sufficiently large to permit an increase in the plate capacity to 40 amperes. Therefore the wire chief decided that the generator to be installed, which was to be driven by a gas engine, should have an output capacity equal to the *ultimate* plate capacity of the battery *jars*. By installing a generator of this capacity, while the investment would be somewhat higher than justified by the immediate requirements, it would be unnecessary to make any future changes, provided additional plates to the ultimate capacity were installed in the jars. In order to charge an 11-cell storage battery, a generator voltage of 30 volts is necessary. The generator required should have, therefore, a possible output of 40 amperes at 30 volts or 1,200 watts. The nearest standard capacity above this figure was found, on inquiry, to be 1,500 watts.

In order to drive a 1,500-watt generator and leave an ample margin in the rating of the engine over and above the rating of the generator, the wire chief decided to figure on a three horsepower engine. Seven hundred and forty-six watts are the electrical equivalent of one horsepower.

The output of the proposed generator, 1,500 watts, is, therefore, slightly more than two horsepower. Now the wire chief learned, on inquiry, that the life of any gas engine is lengthened, and the cost of repairs reduced, when it is not operated at its full load. It is true that the true efficiency is not so great at less than full load, but for telephone service it was concluded that this was not of the greatest importance.

The matter was considered pro and con and the representatives of the various manufacturers were interveiwed. It was

found to be reasonably certain that the cost of the necessary power would be very much less, provided the gas engines were installed. So the wire chief was instructed to make a short trip to neighboring exchanges for the purpose of checking the preliminary estimate. Some divergence of opinion was encountered as to the advisable relative ratings of the battery, the generator, and the engine, but the arguments advanced by the Fosterville wire chief were found to be well founded and he returned without making any substantial changes in the preliminary specifications.

Accordingly, a three horsepower horizontal, single cylinder, special electric light engine was installed, belted to a 1,500-watt, slow speed, noiseless, charging generator.

The basement of the Fosterville exchange building was sufficiently spacious to permit of the installation of the engine and generator so that the distance between the centers of the engine and generator pulleys was 15 feet. This made it possible to use a very long, very slack belt and the relative positions of the engine and generator were arranged so that the slack side of the belt was on the top. In his youth the Fosterville wire chief had worked as a thresher and had learned at that time the advantage of a long, loose belt with the slack side uppermost. More power may be transmitted by such a belt than by a very tight one, as the loose belt encircles a much greater part of the periphery of the pulleys.

When the work of installing the engine and generator had been completed and they had been carefully tested out, the wire chief determined to make a test to determine the truth or falsity of the preliminary estimates of saving to be produced by this method of generating electric power for the exchange. An ordinary charging day was set aside for the purpose and the following method was employed:

Readings of the voltage at the generator terminals and of the output in amperes, were taken at intervals of ten minutes throughout the charge. The supply of fuel to the engine was drawn through a special gas meter so that it was a very easy matter to determine the amount of gas delivered. The exact number of cubic feet used was determined by taking the reading of the meter at the start of the test and at the end carefully noting both times the small pointer on the meter that indicated single feet.

It was found that the average voltage at the generator terminals was 26.65, and that the average output of the generator to the battery was 20.27 amperes. The duration of the charge under observation was only seven hours.

Under these conditions the watt hours delivered to the battery in this charge is equal to the average amperes, times the average volts, times the number of hours through which the charge continued, or 3,781.3. Now one kilowatt hour is equal to 1,000 watt hours, so that the electric energy delivered to the battery was 3.7813 kilowatt hours.

The gas consumption for this charge was found from the meter readings to be 151.25 cubic feet or 40 cubic feet per kilowatt hour. At 20 cents per 1,000 cubic feet, the Fosterville wire chief had no difficulty, after making due allowance for oil, supervision, interest on additional investment, and repairs, in showing a very substantial saving for the exchange power.

The management at the mill had been embarrassed by fuel shortage once or twice, so the wire chief, being a very conservative and careful type of employe, decided to make use of the mercury arc rectifier once each month for the regular routine charge. By so doing he insured its working condition in case of emergency and secured one day per month for such overhauling as the gas engine might require.

Since he was a very careful employe, he never allowed the cooling water to stop when the gas engine was in operation; made sure that the cylinder and crank received plenty of oil and that the self-oiling rings in the main engine bearings were not stuck in place. With these precautions the gas engine gave no trouble whatever in operation.

CHAPTER XXV. The Toll Switchboard.

643. *Impedance of drops bridged on through toll lines.*—In small magneto exchanges there is generally no difference between the switchboard equipment devoted to toll or long distance service and that devoted to local service. Often there is no difference in appearance, but an effort is made to increase the impedance of switchboard drops bridged on through toll lines by using a winding of higher resistance in their coils.

It must be remembered that it is the *impedance* resistance, plus reactance — of such drop windings that should be increased and not solely the resistance. In fact, an increase in the resistance of the winding of the switchboard drop may, or may not, increase its impedance. Other elements enter into such a problem. The writer is familiar with a type of switchboard drop in which the 200-ohm drop presents greater impedance to voice-carrying currents than does the 500-ohm drop.

High impedance is essential to toll drops bridged on through toll lines in order to prevent, as far as possible, loss in transmission.

644. *General broad distinction between natures of toll and local circuits.*—The toll circuit is essentially a local talking battery circuit in the sense that battery potential for any purpose must be eliminated from it. Calling is always done by means of ringing current and there is no calling battery potential on the line, although no calling may be necessary in the case of those toll circuits over which connections are set up in accordance with arrangements made by telegraph.

The general broad distinction between the nature of the toll circuit and that of the local circuit is based upon the higher insulation necessary for the toll circuit, its lower resistance per mile, freedom from battery potential, and the use of switchboard signals operated exclusively by ringing current. Ordinarily, of course, the mile length of the toll circuit is greater than that of the local circuit.

(*To be continued.*)

Bell Rural Patrons to Establish Independent Exchange.

Some 400 farmers of McLean county, Ky., in the vicinity of Calhoun, the county seat, and connecting with the Bell telephone exchange in that city, are organizing a revolt against the ukase of the company, proposing to withdraw from it altogether and establish an Independent exchange.

Heretofore the company has been serving the rural patrons at a flat rate of $5 a year each, the rural subscribers owning their lines to the city limits. The dictum recently promulgated would require the rural patrons not only to own and maintain the lines, but to own and maintain the telephone instruments used, while, further, the company proposes that it must receive a minimum of $36 revenue per year from each line, with the additional proviso that all subscribers on a single line in excess of six shall pay $6 each for the service.

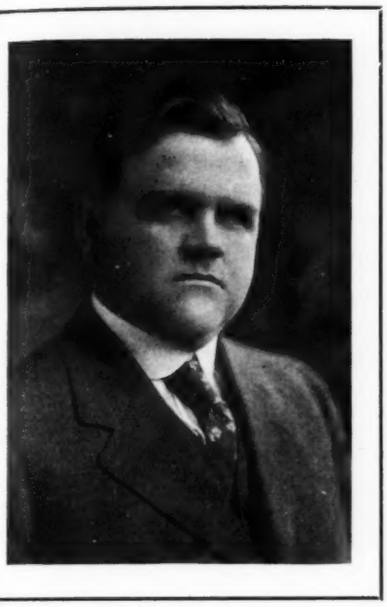
It was to be presumed that the subscribers would approve the announcement and buy from the Bell company the magneto instruments now adorning the walls of their homes. However, things have not developed that way. These 400 rural subscribers propose, instead, to withdraw from the Bell exchange altogether, restore the Bell instruments to that company and, using their existing lines to the city limits, to establish an Indepedent exchange of their own.

That they will not be deprived of the advantage of communication with the merchants of the city, now obtained through the Bell exchange, is provided through the assurances on the part of these merchants that they are with the rural subscribers heart and soul.

A mass meeting of the 400 rural subscribers held recently, was attended by Minor Corman, superintendent of the Central Home Telephone & Telegraph Co., present by request of the rural patrons affected. Asked if the Central Home would give toll connection with the proposed Independent exchange, Mr Corman assured the organizers that it would, and also build a line from Owensboro, Ky., 15 or 20 miles north.

Biographical and Personal Notes

H. B. SHOEMAKER, president of the Iowa Independent Telephone Association for the past two years and manager of the Commercial Telephone Co., of Toledo, Iowa, recently disposed of his telephone interests and has withdrawn



H. B. Shoemaker.

from the telephone field. He is now engaged in the automobile business at Waterloo, Iowa, as secretary and treasurer of the Waterloo Auto Clearing House.

Mr. Shoemaker was born in Pennsylvania in 1877 and in the same year his parents moved to Iowa. He received his education in the public schools of Iowa, the Western College, at Toledo, and the Upper Iowa University, of Fayette. After graduating from the Upper Iowa University in 1899, Mr. Shoemaker acted as principal of schools in the towns of Chelsea, Montour and Gladbrook, Iowa, for a period of seven years.

In 1906 he became associated with the United Exchange Co., operating exchanges in Tama and Grundy counties, in Iowa. In 1907 he purchased one-half interest in the Commercial Telephone Co., of Toledo, Iowa, becoming manager of the company. He acted as manager of that company until January 1 of this year, when he disposed of his holdings in the company and removed to Waterloo, Iowa, to engage in the automobile business.

Mr. Shoemaker has been very active in the affairs of the Iowa Independent Telephone Association, as member of the executive committee for several years and president during 1915 and 1916.

His many friends in the Independent telephone field, while regretting Mr. Shoemaker's withdrawal from the telephone business, join with TELEPHONY in extending to him their best wishes for success in his new venture. That he will be successful is not doubted.

DARWIN G. RALEY, manager of the Columbiana county division of the Ohio State Telephone Co., with headquarters in Salem, Ohio, was born at Rogers, Ohio, September 29, 1869. After completing his education at Mount Hope College, at Rogers, he entered the employ of the Western Union Telegraph Co. as lineman and instrument installer in 1888. He was later employed as telegraph operator in various places, leaving the employ of the Pennsylvania Railroad in January, 1898.

In July, 1899, Mr. Raley became affiliated with the Columbiana County Tele-

D. G. Raley.

phone Co., of Salem, which was incorporated in that year. His first experience was that of procuring rights of way, locating pole line leads and farm lines over the county.

When construction work actually begun, he was placed in charge of a gang of men as foreman, building toll and farm lines throughout the county. After serving as troubleman and installer for some years, he was made superintendent of the northern division of Columbiana county at Salem. On May 1, 1907, he was made manager for the county.

Upon the organization of the Ohio State Telephone Co. in the summer of 1914, to take over and merge the properties of some 15 Independent companies in Ohio, including the Columbiana company, Mr. Raley was appointed manager for that district.

The Columbiana district includes exchanges at Salem, Leetonia, Columbiana, New Waterford, East Palestine, Rogers, Lisbon, East Liverpool, Wellsville and Salineville, with a total of about 4,500 subscribers.

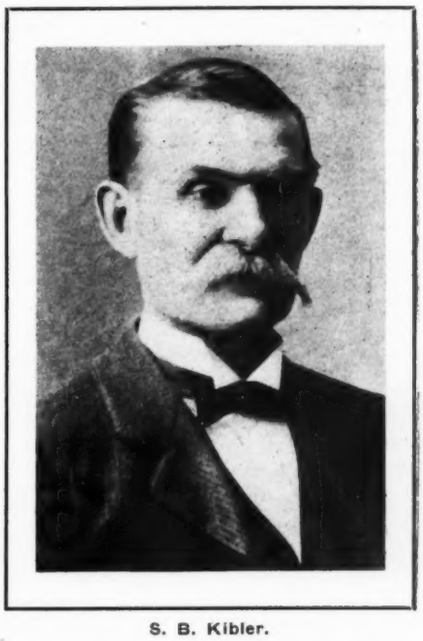
This district boasts of having one of the best rural developments in the state, due largely to Mr. Raley's personal acquaintance. Until recently he prided himself with having a good acquaintance with every one of his subscribers.

Mr. Raley is a member of the United States Independent Telephone Association and also the Ohio Independent Telephone Association. He is a 32nd degree Mason.

SYLVESTER B. KIBLER, president and treasurer of the Boyer Valley Telephone Co., of Woodbine, Iowa, was born at Deerfield, Portage county, Ohio, July 22, 1846, and receiving his education in the schools of Harrison county.

In 1873 he engaged in the general merchandise business in Woodbine with his brother, G. H. Kibler, under the firm name of Kibler Brothers. His brother's health failing, Kibler bought out his interest in the business, in 1901. Taking his son-in-law into the business, he reorganized under the name of Kibler & Son, continuing in business until 1908, a period of over 35 years.

From 1900 to 1912 Mr. Kibler was vice-president and treasurer of the Woodbine Telephone Co., of Woodbine, Iowa, and from 1912 to October 2, 1916, he was



S. B. Kibler.

president and treasurer of the company. On the last-mentioned date the Woodbine Telephone Co. was taken over by the reorganization of the Boyer Valley Telephone Co., of which he is now president and treasurer.

CHARLES W. MCKAY, of Chicago, was married to Miss Rhoda Ann Elliott on March 16 at Thedford, Ontario, Canada. A very quiet wedding was held owing to the recent death of the groom's father. Mr. McKay is associated with the firm of McMeen & Miller, of Chicago, and is well known to TELEPHONY'S readers through his series of articles on "The Valuation of Telephone Properties," now being published in connection with the reading course, "Fundamental Principles of the Telephone Business."

PERRY C. HOLDOEGEL, of Rockwell City, Iowa, was the presiding officer in the Iowa senate on March 24, and had the peculiar experience of calling for a vote on the question of changing the name of an Iowa town to that of his own. The bill being considered related to the town of Jamaica and just before a vote was to be taken, an amendment was proposed changing the name of the town from Jamaica to Holdoegel in honor of Senator Holdoegel.

Despite the fact that there were no negative votes on the amendment, Senator Holdoegel declared the motion lost and called for a roll call vote. Telephone men will watch with interest the telephonic development of Holdoegel.

DR. ALEXANDER GRAHAM BELL, inventor of the telephone, received last week before a gathering which filled Carnegie Hall, the Civic Forum Medal of Honor for Distinguished Public Service, which was presented in 1914 to Major General George W. Goethals and in 1915 to Thomas Alva Edison.

Obituary.

JAMES DELOS RUSSELL, local manager at Hopkinsville, Ky., of the Christian-Todd Telephone Co., died suddenly at his home in Hopkinsville on Sunday, March 11. He was born at Oswego, Ky., in 1861, and entered the telephone business at the age of 21. Recently he was awarded a 35-year service button by the Bell company.

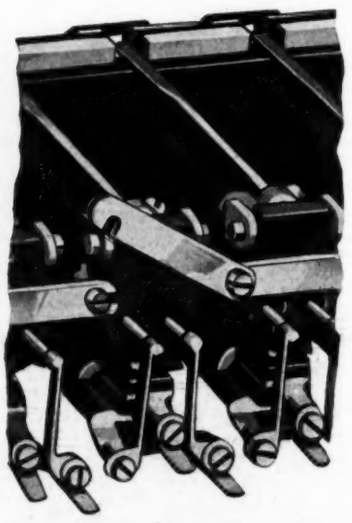
DR. W. S. CHANDLER, proprietor and manager of the Mt. Olivet Telephone Co., Mt. Olivet, Ky., died recently at his home in that city as the result of an attack of pneumonia. Dr. Chandler, who entered the telephone business in connection with his work as a practicing physician, in later years gave it most of his attention and was one of the best known Independent telephone men in the eastern part of Kentucky. He is said to have put Mt. Olivet on the telephone map. His exchange connected with the Central Home toll lines through the Maysville, Mayslick and Cynthiana exchanges of that company. Dr. Chandler was past 50 years of age.

From Factory and Salesroom

Conventions: Southern States, Louisville, Ky., May 24-26

Kellogg Combined Drops and Jacks.

Most telephone men will recognize the illustration of the rear view of the well-known Kellogg combined drops and jacks, reproduced on this page.



Rear View Combined Drop and Jack.

The point upon which the company lays particular emphasis, however, is the easy opening up and separation of the night alarm contact, should it be necessary to get at the armature, or for any reason remove the individual drop. This, it is stated, can be very easily done with Kellogg combined drops and jacks, but a great many telephone men never think of it because it is almost never necessary.

Kellogg drops do not "burn out" as their record in thousands of exchanges throughout the country proves.

New Cygnet Service Car for the Construction Department.

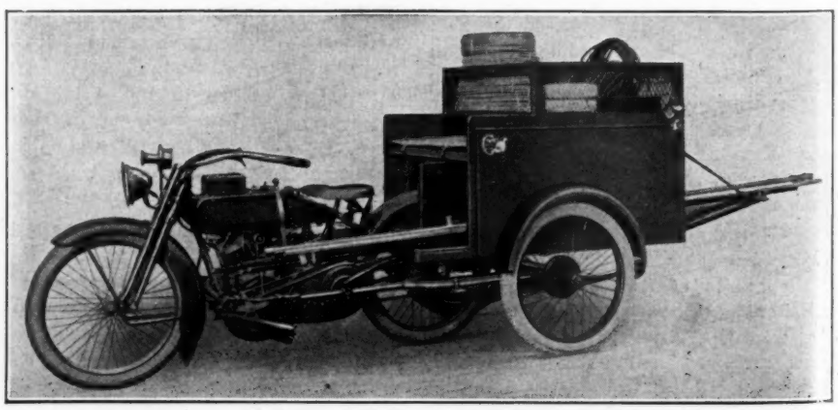
The accompanying illustration of the new Cygnet rear car, Buffalo model "G" service type, is of special interest. It has found instant favor with electrical contractors, plumbers, gas companies, telephone companies, supply houses and many miscellaneous contractors of different sorts. It is especially suited for the transportation of tools and supplies of any kind from one point to another, and does it quickly.

As is seen by the illustration, this Cygnet car is built with doors opening both at the front and at the rear. This, for plumbers, steamfitters, telephone line repair men, and supply houses, makes it possible to carry lengths of pipe and other material considerably exceeding the length of the body of the car with the proper device as shown on the side of the motorcycle. With the regular top of the car, the extension is wide side, and the open top especially adapts this model for carrying coils of wire, bundles of rope and other material.

The seat immediately back of the motorcycle driver is an especially noteworthy feature and easily accommodates two passengers so that a foreman and helper can be taken to a repair job instantly.

This model of Cygnet car is built for attachment to any standard make of motorcycle and is also equipped with brake for use where there is congested traffic and also a top which protects the motorcycle driver when desired.

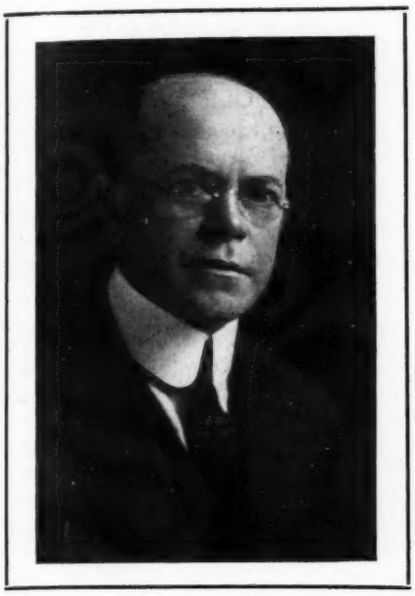
The manufacturer, the Cygnet Rear Car Co., of Buffalo, N. Y., has just recently placed this car on the market, having had a considerable call for a body of this style, before the original car was built, and it is meeting with great favor.



Cygnet Service Car for Attachment to Motorcycle.

Enters Advertising Field as Service Expert.

C. W. Forbrich, Western manager of the Electrical Review & Western Electrician since 1908, has resigned his position to enter the advertising field on his own account, a plan which he has had under consideration for some time. Mr. Forbrich is probably the oldest electrical



C. W. Forbrich.

newspaper advertising man, in point of service, having been in the business since March, 1888. He began as the first office boy of the Western Electrician, and was secretary and treasurer of that publication for a number of years prior to its sale to the Electrical Review in 1908.

His many friends in the Central and Western states will doubtless be interested to learn that he will continue to be identified with the electrical business as he has formed the Forbrich-Burton Advertising Service, Inc., Monadnock Block, Chicago, whose object will be to give selling cooperation; to place trade paper and magazine advertising, and design and write advertising literature of all kinds for electrical, mechanical and other manufacturers.

Mr. Forbrich's partner, J. H. Burton, who was also formerly connected with the Western Electrician, is well versed in creative advertising, and for the past few years has had charge of the service department of Practical Engineer. Messrs. Forbrich and Burton's combined experience of nearly 40 years in electrical and mechanical advertising should fit them to render a most valuable service to their clients.

Lake City, Minn., Company to Erect New Exchange.

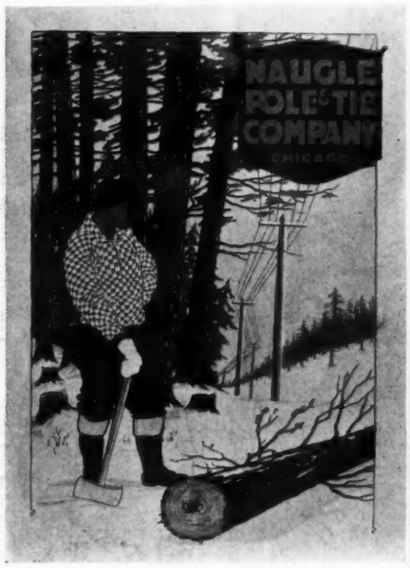
The Dwelle Telephone Co., of Lake City, Minn., has purchased a site upon which to erect a new exchange building. The building will be 37 by 40 ft. in size, two stories and a basement. It will be built of hollow tile and pressed brick. It is expected that the building will be ready for occupancy November 1.

The Naugle Pole & Tie Co's New Pole Booklet.

The Naugle Pole & Tie Co., of Chicago, has just published a most complete, interesting and attractive pole treatise. In its foreword, the following is noted:

"Realizing the value of complete data and pole specifications under one cover, we take pleasure in presenting to pole consumers this booklet, and hope it will be found useful from time to time as reference."

The booklet briefly describes the available supply of poles and the methods being adopted for their conservation. It



Naugle Pole Booklet Cover.

presents reasons why cedar makes an excellent pole timber. There is a complete discussion of methods utilized for prolonging the life of poles and for butt treating. It contains standard specifications, a panorama view of the Chicago yards of the Naugle company, also the specifications of the N. E. L. A., and the A. T. & T. Co. For the convenience of the consumer, the booklet also presents a list of telegraphic ciphers.

The Naugle Pole & Tie Co. will very gladly send to any interested telephone company one of its new pole treatises.

A Growing Independent Telephone Supply Company.

The Mid-West Supply Co., of Plymouth, Ind., jobbers of telephone and electric light supplies, is headed by Sam Tomlinson, who is well known among Indiana Independent telephone men. The company was organized in 1915, with Mr. Tomlinson as president and manager. It was well received from the start and has established a live and growing business.

Mr. Tomlinson was born in 1864 of old style Quaker parents and was raised on a farm. He has been in the selling game since he was 14 years of age. He was for several years manager and president of the Tomlinson Grain & Lumber Co., of Winchester, Ind.

In 1902 he organized the Winona Telephone Co., and bought exchanges at Knox, Winamac and Kewanna. When he commenced operating this system, there were 400 telephones and no toll lines, and the plant was in bad shape. The Winona Telephone Co., of which Mr. Tomlinson has been president since its organization, now operates 4,000 telephones with 400 miles of good toll lines. Mr. Tomlinson believes in giving the public first class service and that a satisfied patron is a good asset for the stockholders.

Mr. Tomlinson was active in the organization of the Northern Indiana Telephone Association in 1913—said to be the first district association organized in the state. He has been president of that organization for three years.

Those associated with Mr. Tomlinson in the Mid-West Supply Co. are F. M. Hodgson, an experienced salesman and telephone engineer (a graduate of Purdue University), and John A. Campbell, a practical telephone man and salesman. The slogan of the company is "An Independent telephone supply company run by Independent telephone men for Independent telephone companies."

Sam Tomlinson.

A Truck for Hauling, Pulling and Trench-Sliding Poles.

"The Handy Pole Truck" is the name of a truck which has been especially designed for telephone, telegraph, light and power companies for pulling and trench sliding poles. It consists of a heavy axle and two heavy wheels, all wooden, material being

of oak, thoroughly air-seasoned and bone dry. The tires are 3 ins. wide and extra heavy. The tongue of the truck is 12 ft. long and is extra large and heavy so as to stand the strain of pulling poles.

When used as a truck attached to the line wagon, truck or service car, the handy pole truck will carry, it is stated, a dozen 25 ft. poles. It is said to be so light running that it makes only a very small load.

For pulling poles a 7-16 in. 12 ft. chain is utilized. The chain is thrown around the pole, and caught in the pulling hook of ¾ in. best grade steel, which is fastened on the end of the tongue. Force is then applied to the end of the tongue and the pole is pulled without difficulty.

In trench sliding poles the truck is straddled across the trench, the pole picked up and the truck pushed along the trench.

The Central Home Telephone & Telegraph Co., of Louisville, Ky., has a number of these trucks in service and, according to General Superintendent Minor Corman, ultimately intends to place one at each of its exchanges and with all its toll line crews. Mr. Corman states that the company finds the truck indispensable for transferring poles to different localities of an exchange, pulling poles and also moving poles where it is necessary to trench them over a few feet.

If the pole is to be moved farther than is practical to trench, it may be lifted clear from its original position over to the new position and dropped in. A pole thus moved is easily supported by pike poles and is said to expedite this class of work, as well as many others to a marked degree.

This pole truck is manufacturered by the Handy Pole Truck Co., of Owensboro, Ky., which will be glad to furnish information to interested parties.

Testimonial of Telephone Man on the Easy Pipe Pusher.

The Easy Mfg. Co., of David City, Neb., manufacturer of the Easy pipe pusher, described in TELEPHONY of March 10, page 40, has received a letter from John L. Moore, superintendent of plant, of the Southern Bell Telephone Co., at Charlotte, N. C., which tells of the results obtained with the pipe pusher. His letter is, in part, as follows:

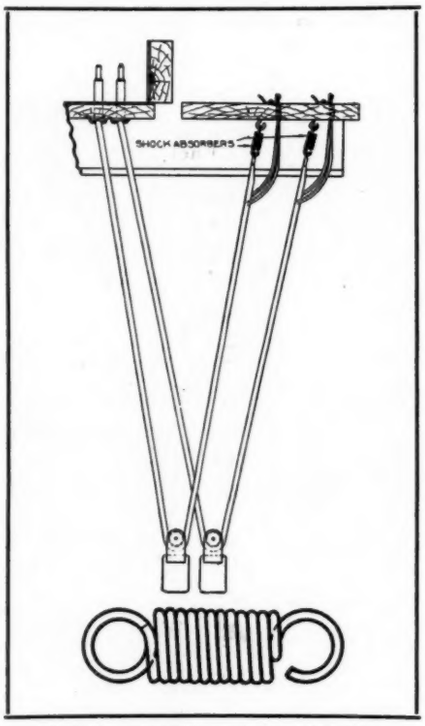
"About 18 months ago we purchased the Easy pipe pusher. The machine has proven very satisfactory; in fact, doing more than you ever recommended it would do, and we are highly pleased. We very often push a 2½ in. pipe from 50 to 75 ft. and a smaller pipe not less than 1½ ins. for 100 ft.

This machine has paid for itself many times, by using it to push pipes under paved streets, which as a matter of fact, prevented the cutting up of the pavement, which is very costly."

Shock Absorbers to Increase Life of Switchboard Cords.

Not a shock absorber for automobiles, but a little device which the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., claims will double the life of switchboard cords by taking up the "bang" when the operator releases the plug from the jack and the cord is carried back to its place by the cord weight. An actual size view of the shock absorber is shown in the accompanying illustration, also a view showing a section of a switchboard with the shock absorbers installed.

The company states that the shock absorber can be easily attached and used with any make of cord. The Stromberg-Carlson company has prepared a neat little folder which describes the shock absorber in detail, copies of which will be furnished to interested parties upon request.



Stromberg-Carlson Shock Absorber.

Assistant Sales Manager of the Monarch Company.

George O. Wilson, who has been connected with the sales organization of the Monarch Telephone Mfg. Co. for the past eight years, has been appointed assistant sales manager of the company.

For about four years Mr. Wilson represented the Monarch company in Texas, but during the last four years has traveled in Iowa and other northern states. Previously he was in the operating end of the telephone business for several years. Having filled all of the positions from ground man to manager of operating companies, he has had much experience which will greatly help him in his work in the future.

Mr. Wilson is now busily engaged at the general offices of the Monarch company in Fort Dodge, Iowa.

Paragraphs.

THE NORTHERN MERCANTILE CO., LTD., of Sandpoint, Idaho, has changed its name to the Northern Cedar Co. and is moving its general offices to 802 Paulsen building, Spokane, Wash.

Obituary.

HARMON CHESTER CHAPPEL, Ohio representative of Manhattan Electrical Supply Co., Chicago, passed away recently.

FERDINAND W. ROEBLING, secretary and treasurer of John A. Roebling's Sons Co., passed away on Friday, March 16.

Book Reviews.

GOVERNMENT TELEPHONES, by James Mavor, Ph. D. Published by Moffat, Yard & Co., New York. 176 pages, 5 ins. by 7½ ins. Price $1.

Telephone men for some time have been more or less interested in the subject of government ownership. During the last year the matter has been of increasing interest to them and information and data relative to the subject is very acceptable.

In 1914, Dr. Mavor, professor of political economy in the University of Toronto, investigated and studied the government-owned and operated telephone system of the province of Manitoba, Canada. Starting in with the acquisition by the government in 1907 of the system of the Bell company in Manitoba, Dr. Mavor presents the history of its operations under the telephone commissioners up to the time of his investigation in 1914. Service, rates and financial results are shown to have been much below what private ownership could have produced.

In his final conclusion, Dr. Mavor states: "The entire history of the government telephone enterprise in Manitoba affords evidence of the most positive character against government ownership. The management has been uneconomical; the enterprise has been handicapped by political intrigue; the finances, mingled as they have been with the general finances of the province, have been unsoundly administered from the beginning, and the obligations of the public have been enormously increased without adequate compensatory advantages.

It is possible that only by repeated and costly failures, such as the Manitoba government telephones, will the public realize that the proper function of the government is not the conduct of industries, but the impartial inspection of them under intelligent laws adapted to the character and conditions of the community and the country."

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The Stromberg-Carlson company is willing to furnish these folders to telephone companies in any quantities. All requests or inquiries should be addressed to the advertising department of the Stromberg-Carlson Telephone Mfg. Co., at Rochester, N. Y.

Howard F. Weiss Becomes Associated with Burgess Laboratories.

Howard F. Weiss, director of the Forest Products Laboratory, at Madison, Wis., has tendered his resignation, to become effective April 1. He has accepted a position with the C. F. Burgess Laboratories, chemical engineers, at Madison, Wis., and will engage in the development of products and processes involving a more profitable utilization of wood and timber.

As director of the largest government laboratory in the world devoted to the study of wood, Mr. Weiss has had charge of numerous investigations in kiln drying, wood preservation, wood distillation, the manufacture of pulp and paper, the mechanical testing of timber, and the production of ethyl alcohol, turpentine, etc. This work has thrown him in direct contact with timber problems in the United States, Canada, Cuba and South America. Several of the government publications are written by him and his book on the "Preservation of Structural Timber" is the most exhaustive written on this subject.

"Chemistry and engineering have played a very important part in the development of our great industries," says Mr. Weiss, "but the application of this knowledge to wood and timber has been relatively little appreciated. This, in my opinion, is one of the chief reasons why the sawmill business, for example, is unattractive to capital in comparison with other lines of manufacture possessing even greater risk. I believe much can be done to remedy this situation and that the owners of extensive timber properties will co-operate in such a movement.

The C. F. Burgess Laboratories, of Madison, Wis., with which I have identified myself, have had considerable experience in industrial research and in the development of new processes and products. They have demonstrated that research work can be carried out so as to be profitable and it is their policy, while carrying on research work, to take part at the same time in the management of industries based upon such work."

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Record of Telephone Patents

1,216,305. February 20, 1917; filed May 10, 1915. AUTOMATIC TELEPHONE SYSTEM; C. L. Goodrum, New York; assigned to Western Electric Co. The talking circuit in this system is divided into sections with a repeating coil inductively uniting the sections. A relay is bridged across the middle point of one side of the repeating coil and has a contact controlling the continuity of the other sections. The relay is operated in accordance with the digits of the called number and the impulses so produced set automatic switches.

1,216,323. February 20, 1917; filed August 7, 1907. TELEPHONE SUBSCRIBER'S CALLING MECHANISM; A. E. Keith, Hinsdale, Ill.; assigned to Automatic Electric Co. This calling dial for an automatic system consists of one wheel for transmitting the so-called preliminary impulse and the final impulse. Another and separate wheel is provided for transmitting the intermediate or so-called vertical impulses.

1,216,357. February 20, 1917; filed May 4, 1914. TELEPHONE PAY STATION; C. E. Pratt, Chicago. An electric circuit controlling device is operated by the winding means of a clock mechanism.

1,216,365. February 20, 1917; filed December 12, 1913. AUTOMATIC TELEPHONE SYSTEM; C. E. Rogers, Oakland, Cal.; assigned to Automatic Electric Co., Chicago. Circuits for uniting one system two-wire and three-wire apparatus are described. A repeating mechanism is associated with the trunk and is brought into operation only when certain of the subscribers seize the trunk. Impulses of one character pass directly through the trunk and impulses of another character are repeated over the trunk by the repeater. There are 98 claims to this patent.

1,216,461. February 20, 1917; filed June 23, 1909. TELEPHONE RING BACK OR REVERTING CALL SYSTEM; G. E. Kimball, Rochester, Pa.; assigned to Automatic Electric Co. A number of differently timed relays control the trunk release circuit. The quicker of these relays when energized serves to open the release circuit. It is energized over two sides of the line circuit in series and the opening of the line circuit causes the relay to open the release circuit before it is opened by the de-energizing of the other or slower relay. The arrangement permits one subscriber on an automatic system to call another on the same line.

1,216,480. February 20, 1917; filed April 19, 1915. TELEPHONE; K. Nichols. A desk telephone arrangement is described. It consists of two receivers and a transmitter supported by a standard.

1,216,534. February 20, 1917; filed November 28, 1913. AUTOMATIC TELEPHONE SYSTEM; G. A. Yanochowski, Chicago, H. E. Hersey, St. Paul, Minn.; assigned to Automatic Electric Co. The feature of this system is the provision for signaling an operator if the selector strikes an open trunk, or the connector switch strikes an open line. There are 93 claims to this patent.

1,216,641. February 20, 1917; filed February 19, 1913. AUTOMATIC TELEPHONE SYSTEM; C. S. Winston, Chicago; assigned to Kellogg Switchboard & Supply Co. Metallic line control circuit for two-dimension automatic switches is the feature. An impulse relay which comprises the control circuit has a call transmitter connected with it and is arranged to be rapidly operated responsive to the called transmitter for transmitting the primary impulses. A differential relay is operated responsive to the impulse relay to attract its armature. A locking circuit for the release relay is effective upon its operation, while a neutralizing winding is effective upon cessation of primary operation of the impulse relay to cause a secondary circuit change following the primary impulses.

1,216,776. February 20, 1917; filed July 25, 1916. TELEPHONE ATTACHMENT; J. J. Convery, New York. A receiver support and a hook-operating attachment for telephone desk stands are described. The receiver support is adapted to hold a receiver in position at the ear when a person is talking into the transmitter.

1,216,887. February 20, 1917; filed June 6, 1914. INDUCTIVE WIRELESS TELEPHONE SYSTEM FOR RAILROADS; T. G. Thornblad, K. H. Warfvinge, and V. G. Werner, Stockholm, Sweden. A stationary circuit is formed by telephone or telegraph wires along the railroad track and comprises a strong current microphone, receiver and battery. A circuit on the train comprises the same equipment. The circuits are in inductive relation to each other.

1,216,946. February 20, 1917; filed March 16, 1912. ACOUSTIC MULTIPLIER; E. E. Clement, Washington, D. C. In this telephone transmitter is a single primary vibrator having a fixed determinate area. A plurality of telephone transmitter elements, each having a secondary vibrator of an area the same as or greater than that of the primary vibrator are exposed through an opening in the wall of the casing. Liquid fills the casing and is adapted to transmit vibrations from the primary vibrator to all of the secondary vibrators and transmitter elements equally and undiminished.

1,217,080. February 20, 1917; filed March 17, 1915; TELEPHONE EXCHANGE APPARATUS; F. W. Adsit, Minneapolis, Minn.; assigned to Adsit General Electric Co. A cord circuit is described which is adapted to co-operate with the line circuit. A timing mechanism having

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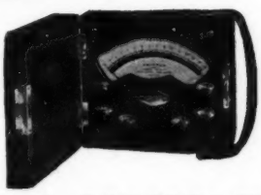

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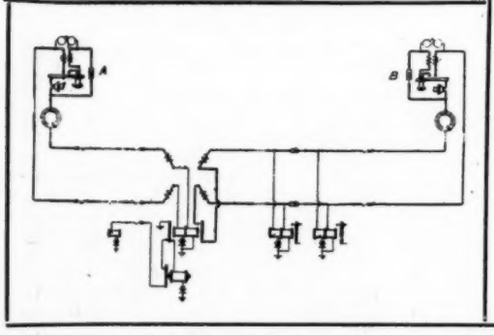
rotatable means controlled by the calling side of the cord circuit, is adapted to open the connection between the cord circuit and the line circuit at the end of a predetermined period.

1,217,081. February 20, 1917; filed May 17, 1915; TELEPHONE LOCKOUT SYSTEM; F. W. Adsit, Minneapolis, Minn. A lockout system for a common battery exchange is described. A lockout mechanism is connected with the line circuit and the subscribers' stations and adapted to disconnect either of the stations when the other is actuated. Means in the lockout mechanism are adapted to connect both stations to the line circuit when battery is applied to the line circuit after both of the stations had been actuated.

1,217,121. February 20, 1917; filed May 14, 1907. TELEPHONE EXCHANGE SYSTEM; A. E. Keith, Hinsdale, Ill.; assigned to Automatic Electric Co., Chicago. In this automatic system, a switching mechanism individual to the subscriber's line comprises two release magnets. One of these is for use when the line is called and the other for use when the line calls for closing the subscriber's line with one of the trunk lines of either one of two groups of trunk lines. There are 93 claims to this patent.

1,217,160 February 27, 1917; filed March 11, 1915. AUTOMATIC TELEPHONE LINE FINDER SYSTEM; B. G. Dunham, Hawthorne, N. J.; assigned to Western Electric Co. A testing system for an automatic line switch is covered by this patent. Primary and secondary testing relays are provided for local and line circuit terminals respectively. The secondary test relay is operable under control of the primary test relay. Provision is made for actuating the primary test relay to disconnect the secondary test relay preliminary to the test of each line by the relays. The primary test relay is kept actuated during the testing of the connected line.

1,217,168. February 27, 1917; filed January 20, 1916. TELEPHONE EXCHANGE SYSTEM; C. L. Goodrum, New York; assigned to Western Electric Co. In this automatic system a line cut-off relay is connected to the free pole of battery on one side and to test terminals on the other side through a normal contact of a line relay. A stop relay for the automatic finder switches is connected to the opposite pole of the battery from that to which the cut-off relay is connected. The line relay is adapted, when energized upon the initiation of a call, to disconnect the cut-off relay from the test terminals and



No. 1,216,305.

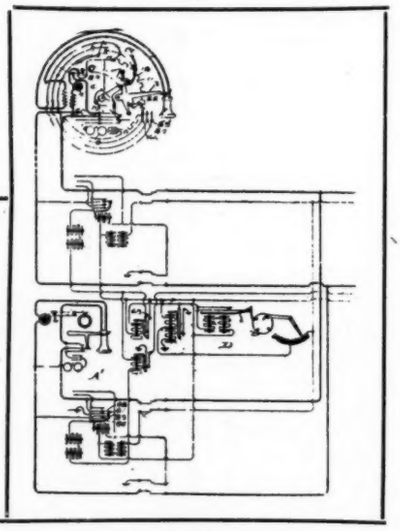
connect thereto the stop relay, the test terminals being adapted to be connected to either free pole of the battery or to the opposite pole of the battery, according to whether the finder is hunting or busy.

1,217,241. February 27, 1917; filed November 15, 1915. ALARM SIGNALING APPARATUS; O. H. Tracy, Minneapolis, Minn.; assigned to the Volunteer Fireman Signal Co., Minneapolis. An automatic machine for sending signals over a telephone line is covered by this patent. The machine comprises a number of contact members each having respective connection with the line and ringing circuits of a corresponding number of telephones of the system. Each group has movable contacts for breaking the line connection and closing the ringing circuit. A rotatable device is provided to successively operate a single contact member which controls a relay for breaking the operating line for the ringing circuits, and the plurality of contact members.

1,217,255. February 27, 1917; filed June 28, 1913. TELEPHONE SYSTEM; C. S. Winston, Chicago; asigned to Kellogg Switchboard & Supply Co. The ringing on the cord circuit of a manual switchboard is covered by this patent. A ringing relay controls a contact through which ringing current is supplied to the called line. The relay is energized at will of the operator by means of a manual switch. The response of the subscriber unlocks a locking relay to discontinue the application of ringing current to his line. The locking relay is energized through a circuit controllable by the operator and a switch is provided for rendering the circuit unresponsive to the operator.

1,217,426. February 27, 1917; filed March 29, 1912. MEASURED SERVICE TELEPHONE SYSTEM; J. Erickson, Chicago; assigned to Automatic Electric Co. A coin-collecting device having a number of chutes is placed at the subscriber's station and a signal associated with the circuit for indicating to the operator the denomination of the coin deposited in the coin-collecting device. A line circuit controls the operation of the signal and a common battery supplies talking current to the line.

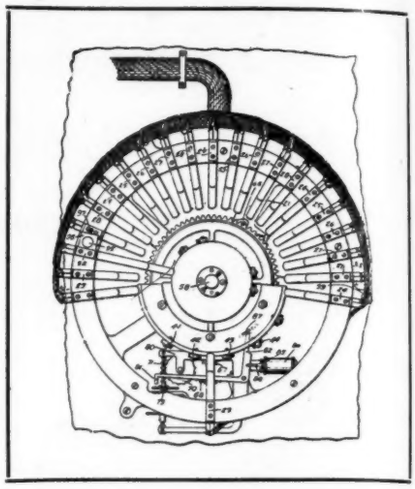
1,217,445. February 27, 1917; filed December 9, 1915. TELEPHONE ATTACHMENT; F. Hein, New York. An extensible receiver holder for telephone desk stands is described. The receiver support is movable to an operative position



No. 1,216,365.

wherein the earpiece is adjacent to the ear of the party talking. Provision is made so that the receiver hook is depressed when the receiver support is returned to its normal or inoperative position.

1,217,472. February 27, 1917; filed April 19, 1906. TELEPHONE EXCHANGE SYSTEM; J. L. McQuarrie, Oak Park, Ill., and F. H. Loveridge, Chicago; assigned to Western Electric Co. In this call distributing system the telephone lines ex-



No. 1,217,241.

tend to stationary terminals at a finder switch. An actuating circuit for the electrically-operated mechanism for causing movement of the movable member of the finder switch has an undivided portion and a divided portion. In the undivided portion of the circuit are a manually-operated switch and an automatically-operated switch, both being normally closed and the automatic switch being controlled from a distant point through the medium of a telephone line. A normally-open switch under control of the mechanism itself is in one of the branches of the circuit and an automatic switch controlled by the telephone line is in the other branch thereof. There are 31 claims to this patent.

1,217,477. February 27, 1917; filed January 23, 1910. TELEPHONE EXCHANGE SUPERVISORY SYSTEM; T. G. Martin, Chicago; assigned to Automatic Electric Co. In this semi-automatic system, an automatic switch is provided for extending a connection from the cord circuit to a called subscriber's line. A trunk line extending to the switch has three parallel conductors and the supervisory apparatus for the cord circuit is controlled over the third conductor to the exclusion of the other two when a called subscriber answers.

1,217,510. February 27, 1917; filed March 3, 1913. TELEPHONE TRUNKING SYSTEM; M. Schwartz, Chicago, assigned to Automatic Electric Co. In this automatic system an improved arrangement of the switches and trunks extending between them whereby more efficient and effective service can be given, is described. Certain of the trunk lines become individual to each of the groups of subscribers' lines while other trunks are common to a number of groups. Means are provided for selecting an idle trunk and for preventing one of the trunks individual to a group being selected until all of the common trunks for this group are in use.

1,217,511. February 27, 1917; filed January 2, 1915. MEANS FOR MINIMIZING INDUCTIVE INTERFERENCE; C. F. Scott, New Haven, Conn.; assigned to Westinghouse Electric & Mfg. Co., Pittsburgh, Pa. A shielding conductor is the feature of this system where the intelligence

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transmission circuit is located within the magnetic field of power transmission system. An auxiliary, low-impedance conductor is also located within the magnetic field but is electrically insulated from and serves to mechanically support one conductor of the power transmission system. A number of spaced electrical connections are made between the auxiliary conductor and the second conductor of the power transmission system and provision made whereby the return current will flow through the auxiliary conductor in preference to the second conductor of the power transmission system.

1,217,548. February 27, 1917; filed December 6, 1915. TELEPHONE SYSTEM; C. Adams-Randall, Boston, Mass. A local transmitting circuit including a transmitter and battery is inductively connected with the main line circuit. A local receiving circuit includes a telephone receiver. Provision is made in the local receiving circuit for connecting one of the terminals of the receiver to the main line at different points and for joining the other terminal to the ground connection at will.

1,218,048. March 6, 1917; filed March 29, 1912. AUTOMATIC SELECTING SWITCH; J. G. Blessing, Chicago; assigned to Automatic Electric Co. The feature of this automatic switch, which has downward and rotary selecting motions, is a relay. It has a pair of armatures having different time constants for controlling the operation and release of the switch.

1,218,067. March 6, 1917; filed January 18, 1910. POLE CHANGER; C. J. Erickson, Chicago; assigned to Automatic Electric Co. In this pole changer two transformer primary windings are controlled alternately by an electromagnet for reversing the polarity or magnetic effect of the transformer whereby an alternating signaling current is induced in the secondary. One of a pair of armatures of the magnet is controlled by a pendulum for the purpose of maintaining the induced current in the secondary in synchronism with the other armature.

1,218,182. March 6, 1917; filed May 13, 1912. TELEPHONY; D. S. Hulfish, Toronto, Ontario, Canada; assigned to Canadian Independent Telephone Co., Toronto. The distinctive feature of this automatic system is the provision for the metering of service. A meter is associated with the subscriber's station and is normally operated upon the completion of the call by a switching device which is responsive to a call. A source of current is located at some of the stations. Provision is made for defeating the registration of a call when a source of current at the terminating station is encountered.

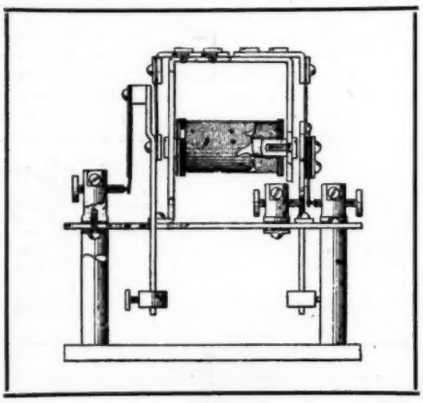
1,218,195. March 6, 1917; filed January 22, 1916. SYSTEM FOR TRANSMITTING COMMUNICATIONS; C. V. Logwood, New York; assigned to DeForest Radio Telephone & Telegraph Co., New York. In this wireless system high-frequency, continuous oscillating electrical waves are produced by means of an evacuated vessel containing wing and grid and filament electrodes. An inductance is connected between the wing and grid electrodes and a radiating member conductively connected directly to the wing electrode and a capacity connected to the grid electrode through a condenser.

1,218,563. March 6, 1917; filed December 4, 1915. SIGNALING SYSTEM; M. L. Johnson, Chicago. A telephone system for use in department stores wherein card records are formed at the substation, is described.

1,218,650. March 13, 1917; filed July 8, 1914. SYSTEM FOR AMPLIFYING ELECTRICAL ENERGY; R. V. L. Hartley, New York; assigned to Western Electric Co. In this system, the series of thermionic repeaters work one into another in a cascade formation. There is a connection between one of the repeaters and a preceding repeater in series which is adapted to apply to the latter repeater a fraction of the output energy of the former. This fraction is less than the ratio of energy so applied to the additional energy thereby developed.

1,218,804. March 13, 1917; filed February 2, 1915. SELECTIVE SIGNALING SYSTEM; F. N. Reeves, Newark, N. J.; assigned to Western Electric Co. In this selective signaling system for party lines in an automatic exchange, the signaling current mechanism applies the current by way of the trunk selector through the trunk and final selectors to the lines. Controlling means for the mechanism is actuated in accordance with the selected trunk groups.

1,218,805. March 13, 1917; filed March 7, 1914; AUTOMATIC CALL DISTRIBUTING SYSTEM; J. G. Roberts, Dobbs Ferry, New York; assigned to Western Electric Co. Call distributing switches connect calling lines with idle receiving apparatus. A line number recorder is associated with each receiving equipment so that at the moment of connecting the calling line with an idle receiving apparatus, the number of the calling line is registered on the recorder.



No. 1,218,067.

1,218,806. March 13. 1917; filed December 8, 1914. TELEPHONE TRUNKING SYSTEM; J. G. Roberts, Dobbs Ferry, New York; assigned to Western Electric Co. The trunk line forms a combined telephonic link and controlling circuit which is inductively connected with the calling subscriber's line. An electromagnetic signal-controlling device has one winding in the local circuit and a second winding in the outgoing end of the controlling circuit. The magnetizing forces exerted by these windings are approximately equal. A source of current is located in the incoming end of the controlling circuit and provision made for reversing its connections.

1,218,892. March 13, 1917; filed August 3, 1916. MUFFLER FOR TELEPHONES; A Pludowski, Waterbury, Conn.; assigned one-third each to W. Szczepaniak and S. Orlowski, Waterbury, Conn. A type of desk telephone set is described. The transmitter is operatively secured centrally within a hollow dome-shaped casing which is swivelly attached at its upper side to the free end of a curved vertical tubular arm mounted upon the standard of the set. A pneumatic head-engaging band is marginally positioned within the open side of the casing.

1,218,998. March 13, 1917; filed May 23, 1913. SYSTEM FOR PACKING AND SHIPPING TELEPHONE APPARATUS; A. M. Haubrich, Chicago; assigned to Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y. This system consists in arranging the wiring for the various elements of a wall telephone set in a cable mounted upon the inner walls of the set. The generator and other elements are separated for shipment into units which do not exceed a predetermined weight, the weight being less than the combined weight of all of the elements.

1,219,003. March 13, 1917; filed August 4, 1913. BINDING POST; W. Kaisling, Chicago; assigned to Kellogg Switchboard & Supply Co. Details are given for a binding post which has a spring clip for the conductor terminal.

1,219,110. March 13, 1917; filed August 2, 1911. METHOD OF, AND MEANS FOR QUADRUPLEXING CABLE; I. Kitsee, Philadelphia, Pa.; assigned to American Telephone & Telegraph Co., New York. In this system of quadruplex telegraphy with distributed capacity, the receiving station contains a polar relay inserted in the transmission line, a localized relay operatively related to the line relay, and means for the localized relay to generate local pulses of alternate direction in accordance with the movement of the movable part of the line relay.

1,219,459. March 20, 1917; filed August 29, 1916. TELEPHONE MOUTHPIECE; S. M. Hino, Lander, Wyoming. A mouthpiece of the sanitary type is covered by this patent. The inner wall is perforated and extended beyond the outer wall to provide a neck. A coupling is provided with a pocket and a neck of the inner wall of the body portion fits into the pocket of the coupler, which forms a closure for the space between the inner and outer walls of the mouthpiece. The disinfectant material is placed within the pocket of the coupling.

1,219,517. March 20, 1917; filed July 6, 1914. TESTING SYSTEM; R. S. Wilbur, Jersey City, N. J.; assigned to Western Electric Co. This testing system includes a Wheatstone bridge having a condenser of known capacity in one of its arms and a condenser of unknown capacity in another arm. A relay is provided for connecting a measuring instrument to the bridge. This relay has a plurality of windings, one of them being connected to a source of direct current and another connected to a source of alternating current thus permitting the relay to be operated when the flow of current from both sources are in the same direction.

1,219,531. March 20, 1917; filed August 23, 1912. TELEPHONE LINE DISCONNECTOR; M. S. Bricka, Milan, Ind. This line disconnector for rural telephones is in the shape of a knife switch. One end of the line is connected to a clamp in the base of the switch and another wire placed between the jaws so that it is frictionally locked between the jaws and the knife blade, and adapted to be removed from the jaws upon the opening of the switch.

1,219,587. March 20, 1917; filed March 4, 1915. TELEPHONE EXCHANGE SYSTEM; J. N. Reynolds, Greenwich, Conn.; assigned to Western Electric Co. In this automatic system the feature is a line relay which is adapted by its actuation to place calling test potential upon one of the multiple contacts for the telephone line. A cut-off relay for the line has its coil included in the test circuit by the actuation of the line relay. The test cir-

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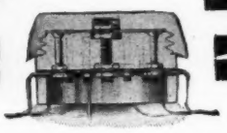

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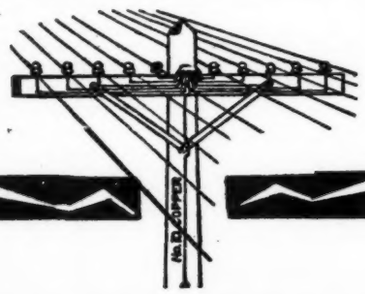

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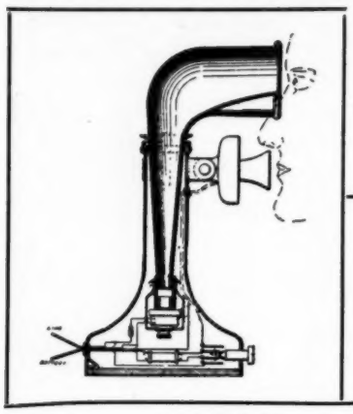
cuit also includes a winding of the line relay.

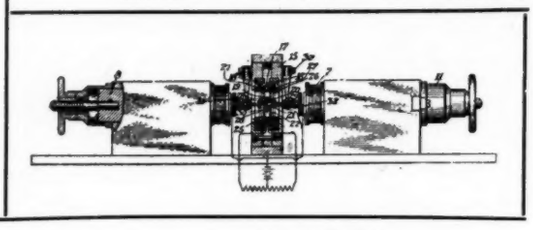
1,219,620. March 20, 1917; filed November 29, 1915. TELEPHONE INSTRUMENT; F. E. Bentley, Maplewood, Mo.; assigned one-fourth each to B. W. Frauenthal, A. S. Johnson and I. L. Burlingame, St. Louis. A loud-speaking receiver associated with the transmitter is covered by this patent. The instrument is in the shape of a desk stand with the transmitter supported at the upper portion. An amplifying horn is carried on the support and has a bell or mouth portion extending from the support above the transmitter and the receiver is operatively associated with the horn.



No. 1,219,620.

1,219,656. March 20, 1917; filed March 17, 1913. TELEPHONE SYSTEM; T. G. Martin, Chicago; assigned to Automatic Electric Co. In this manual system a supervisory circuit in the cord circuit comprises a lamp whereby the operator may supervise the connection. Means are provided for intermittently operating the lamp to indicate that the called line is busy. There is also a separate busy signaling circuit, the two signals being operated alternately. There are 55 claims to this patent.

1,219,700. March 20, 1917; filed July 17, 1906. TELEPHONE EXCHANGE SYSTEM AND APPARATUS THEREFOR; A. M. Bullard (deceased); assigned to Western Electric Co. In this automatic system the telephone lines terminate upon the stationary terminals of a switch. The connecting means comprise a pair of switch arms which are adapted to traverse and make contact with the line terminals. Mechanism operated by the initiation of a call in any one of the telephone lines is adapted to arrest the movement of the arms and cause one of them to complete connection with the terminals of that line. There are 45 claims to this patent.



No. 1,219,727.

1,219,727. March 20, 1917; filed June 3, 1916. TELEPHONE REPEATING SYSTEM; E. Grissinger, Buffalo, N. Y.; assigned to American Telephone & Telegraph Co. A repeater of the electromagnet microphone type having a mechanically vibratory element or system having a definite free period of practically simple harmonic vibration at frequencies as high as 1,000 or more periods per second is described. The polarity of the connections of the repeater of the current supply and with the line is selected so that the mechanical phase displacement in the repeater will be in the direction to balance or compensate for electrical phase displacement elesewhere in the system.

1,219,760. March 20, 1917; filed September 13, 1916; METHOD OF AND MEANS FOR CORRECTING LOADING SECTION IRREGULARITY IN TRANSMISSION LINES; J. Mills, Wyoming, N. J., and R. S. Hoyt, Brooklyn; assigned to American Telephone & Telegraph Co. This method of correcting irregularities in the loading sections of periodically-loaded telephone transmission lines consists in connecting across irregular sections corrective impedances of such value as to render the resultant capacity of the irregular section equal to that of the normal section.

1,219,949. March 20, 1917; filed June 1, 1915. ELECTROMAGNETIC SIGNAL; W. Kaisling, Chicago; assigned to Kellogg Switchboard & Supply Co. A signal device of the bull's-eye type is described. A signal ball is operatively associated with the electromagnet, a cylindrical shell forming a containing member for the electromagnet and signal ball. A face plate, provided with an opening, is placed over the ball so that it rests in the opening when at normal and is withdrawn from the opening upon energization of the electromagnet.

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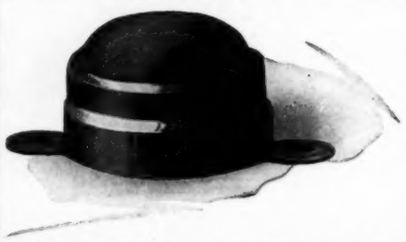

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